THE SOCIOECONOMIC EFFECTS OF THE COTTONWOOD LANDFLOW

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Mr. James Edwin Kee
State Planning Coordinator
Office of the State Planning Coordinator
118 State Capitol
Salt Lake City, Utah 84114

Dear Sir:

We are pleased to transmit herewith a report summarizing our investigation into "The Socioeconomic Effects of the Cottonwood Landflow." Our purpose was to furnish an accurate analytical view of human and practical considerations not heretofore available to those who must decide among several possible alternatives for managing or mitigating the effects of the Cottonwood Landflow. We trust that we have adequately fulfilled that purpose.

We have thoroughly enjoyed our associations with personnel of your office and those of the Regional Office of the Forest Service, U.S. Department of Agriculture. It has been a most interesting project and we hope that we might have further opportunities to serve on other occasions.

I am now at your service as the report is examined and analyzed. Please let me know if I may be of service in this process.

Sincerely,

Garth R. Beacham

Garth R. Beacham, Ph.D.
Project Director

GRB:ed
Attachment

SUMMARY OF

CONCLUSIONS AND RECOMMENDATIONS

The following summary is presented to facilitate rapid review. A more detailed treatment of the conclusions and recommendations of this study may be found in Chapter Five.

CONCLUSIONS:

A. Social Impacts of the Cottonwood Landflow

1. The landflow appears to have had little or no impact on the feelings of personal well-being, values, or attitudes toward others of Manti City residents.

2. There is inconclusive evidence that a "therapeutic community" may have formed in Manti. Such theoretical reactions to disaster or threatened disaster are characterized by communal harmony and helping relationships, common purpose, and willing acceptance of external assistance.

3. There is strong evidence that Manti residents are experiencing greater levels of psychological stress than are residents of Gunnison and Mt. Pleasant.

4. There is evidence that Manti residents are demonstrating a greater sensitivity to the threat of other hazards than are residents of Gunnison and Mt. Pleasant.

5. Though mean-rating values are inconclusive, substantial numbers of Manti residents believe that the Cottonwood Landflow has reduced the quality of Manti as a community in which to live.

6. There is no substantial evidence that the Cottonwood Landflow has caused an erosion of Manti citizens' feelings of "linkage" to their community.

B. Economic Impacts of the Cottonwood Landflow

1. In the private sector, Manti's economy appears to have sustained probable impacts from the loss of a planned industrial park and the failure of three manufacturing enterprises to locate in that city. Recovery from a temporary slow-down in most private economic activity appears to be accomplished.

2. The public sector of Manti's economy has been heavily influenced by unexpected demands upon the city's corporate financing. These demands have resulted in heavy long-term bonding, a disappearance of fiscal reserves, the postponing of planned improvements, and the probability of chronic, long-term problems in meeting the financial needs of the city.

RECOMMENDATIONS:

A. A systematic informational program is needed to counteract past negative publicity and unsupported fears in the minds of Manti residents and those considering private economic developments in or near that community.

B. Consideration should be given to ways in which Manti City might be assisted to meet the currently obligated and probably chronic drains upon the city's fiscal resources, as a consequence of the Cottonwood Landflow.

C. The CH_2M Hill engineering report recommends no specific action toward managing or mitigating the effects of the Cottonwood Landflow. Nevertheless, it is here suggested that at least those alternatives seen by Manti residents as most likely to yield results, be carefully re-evaluated.

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June 1977

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Chapter One

Introduction

Chapter One

Introduction

In June of 1974, an ancient landflow located along Cottonwood Creek, a tributary of Manti Creek in Manti Canyon, Sanpete County, Utah, began a new and accelerated pattern of movement. This large flow, measuring 1 3/4 miles in length, 3/4 miles in width at the toe, and 50 to 300 feet thick was estimated to contain over 25 million cubic yards of material. The landflow movement was north toward the floor of the canyon and the streambed of Manti Creek. The situation rapidly suggested serious hazards to the city of Manti and surrounding lands located at and near the mouth of the canyon.

Some of these potential hazards became realities when the accelerating displacement of the landflow ruptured a municipal water line interrupting water supplies and hydroelectric power production. The water line which crossed the upper end of the landflow mass, was for a time temporarily repaired but ultimately had to be relocated on the opposite side of Manti Canyon. Threat to forest access roads, summer recreation facilities, summer grazing acreage, wildlife habitat and the local watershed appeared imminent. Immediate dangers to Manti City and the surrounding areas became even more threatening with movement of the toe of the landflow into Manti Creek. This resulted in an uplifting of the creek bed, accelerated erosion, possible channel blockage and potential flooding. Downstream damage through sedimentation, and colloidal deposition by irrigation-water supplies were also anticipated.

Since the landflow was located on the Manti-LaSal National Forest, representatives of that agency, community leaders, State officials, and others became vitally interested. These representatives launched cooperative

efforts to assess the physical situation that actually existed and its potential impacts upon the canyon, as well as upon the City and surrounding area located on the alluvial fan and lower lands at the mouth of the canyon. Early efforts focused upon the geologic, hydrologic, and engineering aspects of the situation.

Measurements taken during the late summer and early fall of 1975 indicated that approximately twenty-six million cubic yards of earth were moving at rates of as much as eight feet per day. Later in that year partial stabilization appeared to be occurring. During 1976 considerable further reduction of movement was noted. Reasons for the apparent stabilization and the possibilities of renewed acceleration of movement remain the subject of much speculation and concern. The presence of numerous other inactive landflows in Manti Canyon further complicated the attempts to find solutions. Conjecture and concern remain in many quarters to the current date.

The Forest Service, upon whose land the flow is located, secured funding for continued engineering studies in the canyon and began an assessment of possible alternatives which might be employed in managing the landflow and/or in mitigating its effects. Public safety and welfare considerations dominated early studies. However, concern for long-term solutions, environmental factors and the potential social and economic impacts upon Manti City and adjacent developed lands were recognized as factors of great importance.

Assessing the social and economic impacts of an actual disaster is difficult at best. Assessing those of a situation where some effects are accomplished fact while others are only the results of threatened disaster, is still more difficult. However, since two communities, some 3,000 people,

approximately 20,000 acres of irrigated land, and considerable residential and commercial property are potentially or actually affected by the landflow, such concerns must eventually be confronted.

Although it was not immediately clear which agency or agencies should or could assume responsibility and the necessary authority to deal with the impacts of the landflow, the U.S. Forest Service provided leadership and funding for the preliminary studies. Inasmuch as affected downstream communities and developed properties are not located on Federal land, as well as other logical considerations, the Utah State Planning Office was brought into participation in a search for valid data to guide the selection of alternative methods for alleviating landflow-related damage.

Purpose of the Current Study

Previous studies of engineering and land use considerations inherent in the Cottonwood Landflow have identified a number of alternative proposals for managing or alleviating damage to canyon and to downstream values. These proposals with other data must be critically examined as potential guides to the ultimate decision as to the most appropriate final course of action. The physical considerations of prior studies must be supplemented by an analysis of social and economic impacts of the landflow upon the affected human populations. Purely technical considerations must be balanced by a concern for economic impacts upon the communities and potentially damaging social and psychological responses to the real or perceived impacts of the landflow. It was to provide social and economic data that the current study was commissioned.

Authority for the Study

The current study has been authorized by contract between the Intermountain Region, Forest Service, United States Department of Agriculture and the Utah State Planning Office. The Utah State Planning Office has further contracted with the Snow College Office of Community Services to conduct field research in Sanpete County, to work with a Manti City advisory council, and to produce this report. Technical guidance and support from the Planning Office has been continuous.

Scope and Outline of the Research

The original objectives of the research were:

A. To develop a description of the social and economic structure of the two communities most directly impacted by the Cottonwood Landflow, both in the present and for the time immediately preceding the accelerated movement in the Landflow.

B. To develop, for comparison purposes, a like description of a third community, chosen for reasons of similarity in history, size, social and economic base, and other significant factors, which community could be expected to exhibit no significant impacts from the Cottonwood Landflow.

C. To assess the probable impacts upon these communities' social and economic structure and functioning of alternative proposals for management of the Cottonwood Landflow under consideration by the U. S. Forest Service, including the possible alternative of non-action.

D. To determine citizen and community attitudes toward the Landflow and its potential impacts upon those communities.

A citizen Advisory Council has been constituted in the community most likely to be directly affected by the Landflow. This group has met several times under the chairmanship of an individual of their own choosing. They also ultimately controlled the constituency of the council. Their purpose has been to offer special insights relevant to the design and conduct of the study. However, at no time have they exerted structural or procedural control over the research.

The specific design of the research and its limitations are described more fully in Chapter Three. This design includes three basic elements, all of which are common methodological elements in the literature descriptive of studies with similar objectives. They include:

1. Attempted construction of a factual data base covering the period from just before the 1974 acceleration of landflow movement to the present.
2. Personal interviews of selected "key informants" in all three communities; the two most directly affected and the "control" community. These informants were chosen for their acknowledged positions of leadership and/or their possession of special knowledge relevant to the study.
3. Mailed survey of a randomly selected sample of citizens in all three communities.

The "key informant" interviews were focused upon a number of variables for later analysis. Among those included are:

1. Perceived impacts of the landflow on the quality of community services and government.
2. Perceived impacts of the landflow on business, organization, climate, and agriculture.

3. Perceived impacts of the landflow on individual well-being, including threat to life from natural disaster.
4. Current base-line data on the quality of community services, business and organizational climate, and individual well-being.
5. A brief value profile.
6. Cohesion and solidarity: base-line data and perceived landflow impact.
7. Personal efficacy (feelings that one can influence key governmental decisions, etc.): base-line data and perceived landflow impact.

The mailed questionnaire sought similar data including the following specific focuses:

A. Quality of Life (as assessed by the people in the sample)
   1. Quality of health, education and environment.
   2. Quality of leisure and recreation.
   3. Quality of security and safety.
   4. Happiness and satisfaction.
   5. Quality of public facilities and services.
   6. Perceived changes in each of the above (1-5).
   7. Perceptions of possible impacts of the Cottonwood Landflow.

B. Social Relations
   1. Interpersonal relations (family ties, friendship, etc.).
   2. Community ties (cohesion and commitment to community, civic participation, and access to leaders.)

C. Attitudes
   1. Feelings of powerlessness
   2. Feelings of alienation and lack of purpose in life.

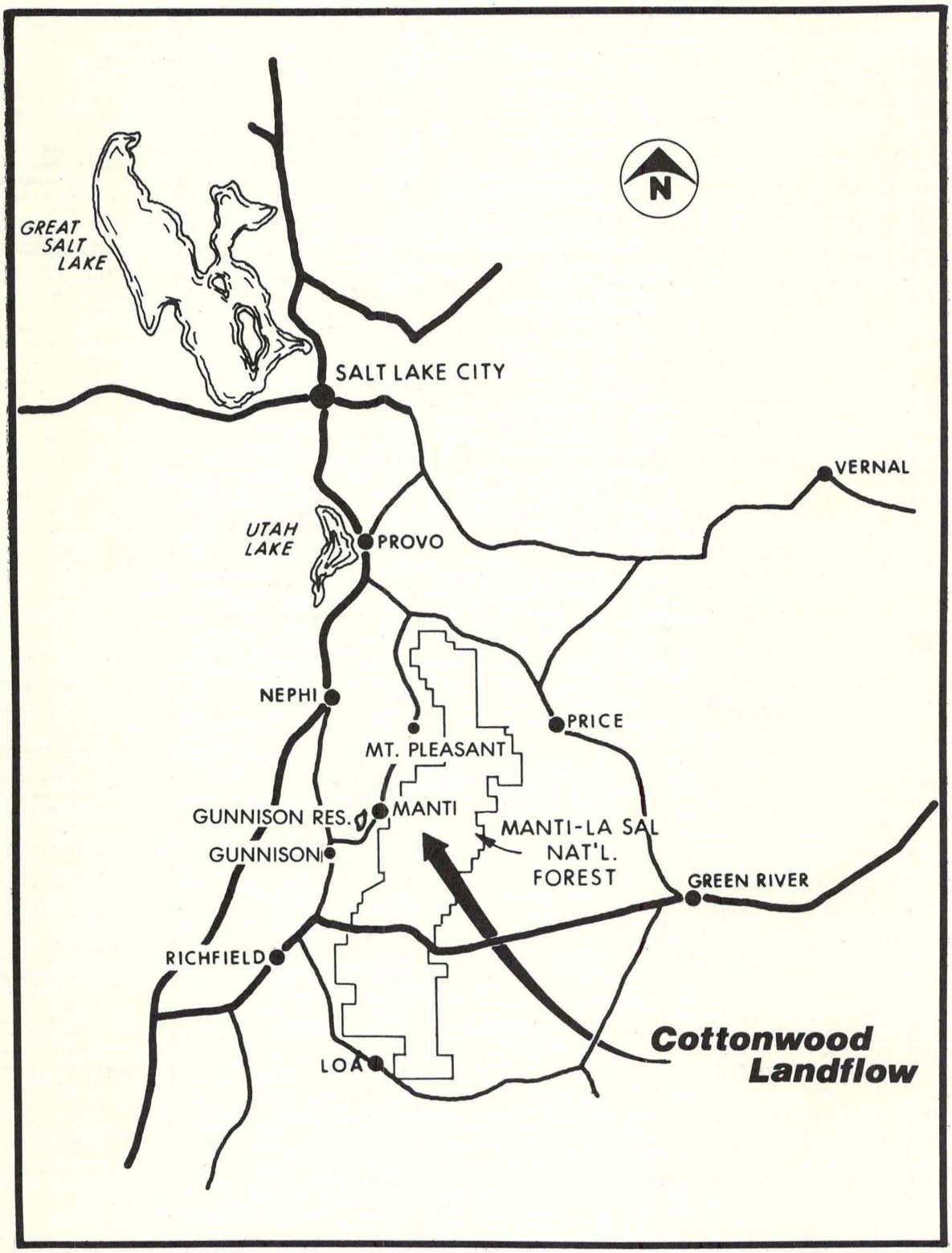
Highly significant to the research design are the potential impacts of the several alternatives under consideration by the U. S. Forest Service as possible methods for managing or mitigating the effects of the landflow.

The "non-action" alternative was explored by the interview schedule and the survey questionnaire in specific questions that conveyed the conception: "How important is it to you that something be done about it (the landflow)?"

Reaction of citizens to the potential impacts of the other six alternatives were investigated by a multi-element grid of questions and possible responses. The six alternatives presented were:

1. Pipeline bypass around the toe of the active Cottonwood Landflow.
2. Debris dam or dams on Manti Creek between the landflow and the city of Manti.
3. Debris retention structure on Cottonwood Creek, tributary to Manti Creek.
4. Stabilization of the channel through the toe of the Cottonwood Landflow.
5. Removal of water from the head of the landflow.
6. Various combinations of the above.

The data collected by this research design have been analyzed by a variety of methods including analysis of variance, multiple regression, and partial correlation techniques to isolate significant variables. Trend analyses have also been employed in an effort to identify trends attributable to the landflow and to compare factual baseline data with respondent perceptions. For the sake of brevity and comprehension, not all analyses are presented, but that material presented is consistent with them.

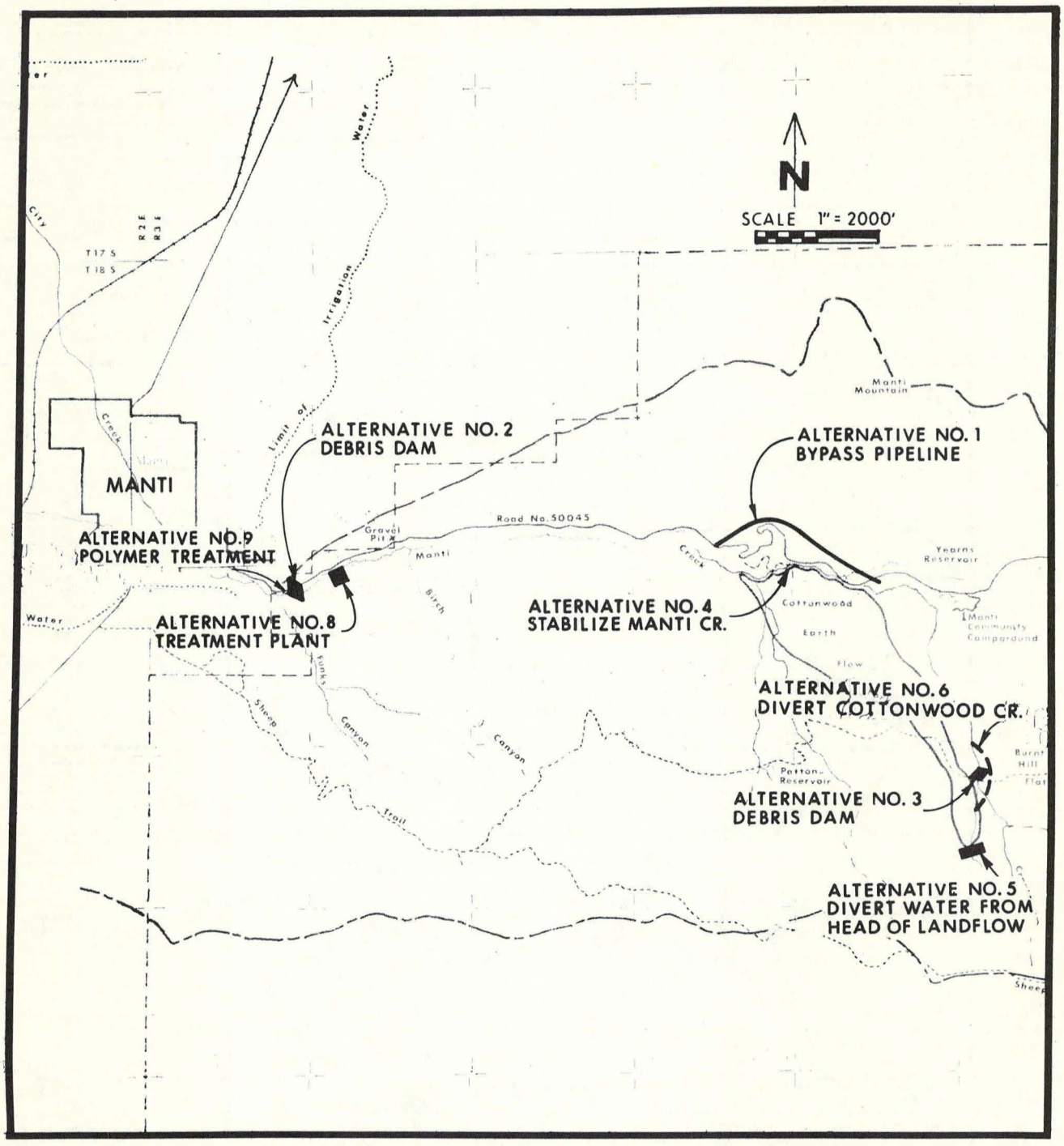


Regional Setting of the Cottonwood Landflow

Manti, Sanpete County, Utah

The Cottonwood Landflow and Manti Canyon

Lower Manti Canyon and Outlet Region



Physical Location of Proposed Management Alternatives (CH_2M HILL)

Chapter Two

Background Information

Chapter Two

Background Information

The organized study of landflow phenomena by physical scientists and engineers must be regarded as a very young "science." However, social scientists have been investigating the effects of natural disasters, such as a major landflow might constitute, for a much longer time. The literature of such studies thus provides a useful framework for the selection of research techniques and for possible interpretations of research findings. With these thoughts in mind, the following brief survey of recent disaster research was compiled.

Literature Review: Disaster Research

Most disaster studies can be categorized as either examinations of the consequences of the threat of expected disaster or the aftereffects of actual disasters. The predisaster research is much less common, except for studies of organizations whose mission involves active involvement in disasters.

Two major themes emerge from the predisaster research. First, persons threatened by disaster often experience stress, feelings of loss of meaningfulness of life, abandonment of planning for the future and withdrawal (England, 1976; Fritz, 1961). The withdrawal usually involves a denial of the threat at the conscious level and a refusal to prepare for the disaster (Gange, 1975). Second, specialized organizations (Army Corps of Engineers) strive to mitigate the threat or to make advance preparations for the disaster (Stoddard, 1969, and Burton, Kates and White, 1968).

The research on responses to disaster itself is much more extensive. Several general conceptual examinations of disaster are available. Most of the studies suggest that there are three general phases to response to disaster. The first phase occurs immediately after the disaster event. It is not a period of mass hysteria, looting and loss of social control often presented in the media. It is a period in which survival, finding family, and a search for safety are present. Social distinctions are leveled, priorities clear and community pride is enhanced. The second phase follows soon after the disaster and involves the establishment of a therapeutic community. The community is characterized by harmony, mutual help, grateful acceptance of assistance from outside the community and common purpose. The third phase involves the normalization of activities. It often includes the emergence of conflict and criticism over handling of the crisis. Accusations of fault and special treatment are frequently present. However, the community moves to re-establish and extend predisaster trends (Quarantelli and Dynes, 1976).

Some research indicates that psychological stress may be common during all three phases. The stress is often associated with reduced reasoning and performance abilities. The reduced reasoning abilities emerge as the victim's time perspective is distorted, his ability to make decisions is impaired and his communication facilities decline. Performance in terms of innovation, flexibility, accuracy and sense of priority is less effective (Holsti, 1971). In addition, other research suggests a general disorganization of functioning, feelings of helplessness, and ineffectiveness (Schulberg, 1974).

In general, conceptual notions have been made more specific by focusing either on the personal individual response or on the response of

social organizations. At the personal level, one study is particularly relevant to the Cottonwood Landflow problem. Church (1974), reported a study of the emotional and behavioral responses to the Buffalo Creek disaster. In 1972, a dam above Buffalo Creek burst and flooded the town killing over 100 people, destroying homes, and driving residents to high ground. The residents experienced severe sleeplessness for some time afterward, fear of rain, fear of noises, survival guilt, amnesia, and eating disorders. Many felt severely disoriented and powerless. War has been found to create similar responses in children (Milgram and Milgram, 1976).

Drabek, Liu and Key (1976), studied victims of a tornado three years following the event. They found that victims reported greater optimism about the future than did nonvictims of the same community. Trainer and Bolin (1976), however, have found that flood victims in Rapid City, South Dakota, and earthquake victims in Managua, Nicaragua experienced personal disorientation in the sense that there was a decline of leisure activities formerly engaged in, shopping and consumer activities declined, and satisfaction remained below the predisaster period for a considerable period of time.

In general, feelings of psychological well-being, emotional health and effectiveness decline as a consequence of the disaster and the stress it generates.

On the organizational level, it has been found that role conflict is generated for individuals by the disaster. It occurs due to the conflicting demands of family, employment, and society in general at the time of the event (Fritz, 1961). However, Fritz claims the role conflict soon gets worked out and the disaster produces the therapeutic community organization.

It is a shift from self-interest and concern to a concern about the "community of sufferers." The organizational norms and goals in existence prior to the disaster are viewed as irrelevant and supplanted by emergent norms and goals which appear to serve the immediate problem. Focus is on the immediate day-to-day needs. If the threat persists, Fritz suggests a hedonistic, "live for today" orientation emerges.

Dynes (1969), contended that disaster reduces the autonomy of organizations. They no longer control their physical environment, nor are their goals viewed as significant. The decisions of service organizations come to be based on pragmatic concerns; the perception of what needs to be done even if legal limits are ignored.

One particularly important set of social organizations whose structure is often of interest in disaster research are the primary groups such as families and friendship groups. Robert Bolin (1976), has found that certain members of families experience more disorganization than do others. Females suffer more than men, as do the older compared to the younger. The family as a whole experiences greater solidarity, but there are also more conflicts due to the loss of privacy needed to maintain an intimate environment and confront the trauma of the disaster. In general, Bolin suggests that firm kinship ties grow stronger under the challenge of the disaster, but weak ones grow weaker. Drabek, et. al. (1975), report that family interaction, reliance on family for help, and visiting increase after a disaster. However, friendship ties are more likely to decline after disasters.

Poulsheck and Cohen (1975), report that the elderly experience disaster differently than do others. Their family role performance is curtailed for some time following the disaster. They also find that a family-friend support system emerges to aid them immediately after the

disaster, but it breaks down within 100 days, leaving the elderly alone to resolve the pressing long-term problems of housing, furnishings, and other such adaptations.

In summary, both the anticipation of disaster and actual disaster have been found to influence the individual, and also his ties to family, friends and community. Disaster also affects social organizations, especially communities. Many of the effects are long lasting and are problematic for the victim.

Chapter Three

Methodology

Chapter Three

Methodology

The primary objective of the research here reported is to project the socioeconomic impact of the Cottonwood Landflow on Manti, Utah and other area communities. The basic methodology involves comparing a community where there is no reason to assume the landflow has an effect with two communities which may be expected to exhibit some impact. The community in which no impact was expected was chosen for reasons of its location and overall similarity to the two communities where impacts might be anticipated. In this chapter, the research design and techniques employed will be described.

The Variables for Study

A major decision that must be made in selecting a methodology for such a project is the choice of variables to be included and those to be excluded. The majority of the variables here selected have been found, in previous research, to be responsive to disasters and impending disasters of several types.

The social variables include several which can be interpreted as indicators of the social-psychological makeup of the individual. These include the individual's personal sense of well-being (happiness, optimism, feelings of belonging), values (importance of honesty, religion, physical fitness), attitudes about others (the perceived trustworthiness and altruism of mankind in general), feelings of stress and impending disaster, and perceptions of the landflow itself.

A second set of indicators are related to the community: its goodness as a place to live and perceived changes occurring in community structure. Goodness as a place to live is often called "quality of life." This conception includes such objective variables as the quality of education, crime prevention, and recreational opportunities. However, it also includes subjective variables such as residents' perceptions of the quality of community services.

A third set of variables relates to the ties or linkages of an individual to his community and parts of that community. These variables include psychic ties to the place where a person lives, his participation in civic activities, kin ties within the community and friendship ties.

The fourth and final set of variables included in the study are primarily economic in nature. In a general sense, the landflow may have affected land values and rates of unemployment. In the public sector, areas of concern would include such items as tax revenues and public assistance. In the private sector, economic activities such as agriculture, retail sales, wholesale trade, construction, industry, and banking may have experienced some impacts.

In order to assess the impact of the landflow on these four sets of variables, the following design was developed.

The Research Design

Ideally, the landflow's socioeconomic impacts would be assessed by gathering data representative of conditions before and after the recent movement. They would be gathered in Manti and in at least one highly similar community chosen to provide a control. While this process was possible for a few of the economic and community variables, none of the

variables relating to social-psychological makeup or those included as measures of ties to the community could be treated in this fashion. No prelandflow data were available. As a consequence, the following design was selected. It focuses on the collection of postmovement data in one community which had no direct exposure to the landflow, one community which was exposed to some degree, and the one community most directly affected. While this procedure will not provide conclusive evidence of landflow impacts, it does strongly suggest some of them.

The three communities selected for the research are all located in Sanpete County, are roughly the same size, and are similar in many respects. Mount Pleasant was selected as the community for which there would have been little or no landflow impact. It is situated twenty-two miles north of Manti Canyon where the Cottonwood Landflow is located. No irrigation or drainage system connects the two locations. Gunnison was included as a community which might potentially experience some impacts from the landflow. An irrigation reservoir serving the Gunnison area is located in the path of one of the Manti Creek flood channels. Sedimentation damage is thus a potential problem. The city is approximately fifteen miles southwest of Manti. Manti is the community most directly affected. The relationship of this city to the landflow has already been discussed.

The three communities are strongly similar in past history, size, economic base, and other key factors. Hence, it is assumed that an examination of differences between the three cities, in the scale-values of the variables selected for study, may provide indications of the magnitude of the landflow's impact.

Once the three cities were identified, techniques for gathering data

were selected. Three major data sources were designated. The first was a survey of existing data. This information is primarily useful for comparative assessment of the community and economic indicators. In several instances, the existing sources included information for both pre- and postlandflow time periods in all three communities. No such data sources were encountered for the social-psychological variables nor for ties to the community. Many aspects of the community itself were also inaccessible to comparative study through these sources.

The second data source was a mailed survey. It was sent to a random sample of residents in each community. The survey instrument was designed to obtain data related to the social-psychological variables, the personal ties to the community, perceptions of the quality of the community and perceptions of different aspects of the landflow's impact on these dimensions.

The third data source was a series of interviews of those identified as key persons in each community. The persons selected for interviewing were identified as leaders in their communities in one respect or another and as particularly knowledgable. They were interviewed to provide in-depth information regarding the community, the landflow's impact, and their perceptions of the consequences of several proposed remedies to the landflow problem.

The Mailed Survey

As described above, the mailed survey was designed to obtain information concerning social-psychological states, ties to the community, perceptions about the quality of the community, and perceptions of the landflow's impact from a broad cross-section of residents, theoretically, repre-

sentative of each of the communities surveyed. To accomplish this a questionaire was mailed to a simple random sample drawn from local telephone directories.

The questionaire was mailed along with a cover letter explaining the projected research. Two weeks later a follow-up letter was mailed to those who had not returned the questionaire. After another two weeks a second follow-up letter and another copy of the questionaire was sent by certified mail. The questionaire and letters are included in Appendix D. The response rates and sample sizes are presented in Table 3.1.

TABLE 3.1 Response Rates and Sample Sizes for the Mailed Survey

City	Sample Size	Number of Deceased, Moved, etc.	Percent	Number of Usable Returns	Percent	Total Not Accounted For	Percent
Gunnison	94	11	12%	58	62%	25	27%
Manti	94	11	12%	58	62%	25	27%
Mt. Pleasant	93	6	6%	61	66%	26	28%
Total	281	28	10%	177	63%	76	27%

These results indicate a relatively low non-response rate. They also indicate that the response rates were consistent in all three communities.

The questionaire itself, is presented in Appendix D. The majority of the questionnaire items have been taken from measures employed by social scientists in other research and are widely validated.

The Key Informant Interviews

The mailed survey provides data from a representative sample of residents of the three communities, but it fails to take advantage of the fact that some persons have specific access to useful information,

a more informed perspective from which to view the landflow problems, or special expertise. In addition, a mailed survey does not provide in-depth interviews. Hence, it was decided that interviews of key persons in the communities would be useful.

The "key persons" in each community were selected by identifying leaders who hold such formal leadership positions as mayor or member of a city council. These persons were contacted in person and asked to make lists of the formal and informal leaders of their community. They were told their list should include businessmen, farmers, club leaders, educators, church leaders, and others. A sample of persons on this list was contacted by telephone and asked to name other people who were particularly well-informed, but who might not hold formal leadership positions. The supplemented list was used for key-informant interviewing.

Each person on the supplemented list received a letter indicating the purpose of the project, that they had been selected for interviewing as a leader of their community, and that they would be contacted to arrange an appointment. The interviewers subsequently contacted each person on the list for this purpose.

The interviewers were especially trained for the project. They were all from Sanpete County, but not from any of the three communities. Also, interviews were scheduled to occur simultaneously in all three communities. The number of persons on each list and the number of interviews completed are listed in Table 3.2.

TABLE 3.2 Sample Sizes and Response Rates for the Key Informant Interviews

City	Number On List	Number Interviewed	Percent Interviewed
Gunnison	40	34	85%
Manti	40	33	83%
Mt. Pleasant	38	31	82%

The interview instrument was designed to obtain data on the respondent's perceptions of his community as a place to live, his beliefs about the landflow's impact, and reactions to each of the alternative solutions suggested by previous engineering studies. The instrument was constituted of items employed in other socioeconomic impact studies plus additional views developed specifically for the current Cottonwood Landflow study. It contained a general section of questions to be answered by all persons interviewed and a section of special questions designed only for people with expertise in a particular area. The questionnaire was pretested in Ephraim, Utah, before the interviewers were trained. The questionnaire used is presented in Appendix C.

Limitations of Design

The results obtained in the survey have two limitations which must be taken into account. First, the design itself was adopted because of the lack of prelandflow data. It is constructed to display differences between the three communities during the postlandflow period. However, the lack of prelandflow data will not allow a determination as to whether the differences were also present in the prelandflow period. To minimize the severity of this limitation, only differences for which there is sound theoretical justification are considered as potentially resulting from the landflow. Also, demographic information from the 1970 census which may indicate prelandflow differences are examined along with demographic information from the mailed survey. Differences from either of these two sources may provide explanations of differences in the variables being examined for landflow

impact. This possibility is analyzed.

The second limitation here recognized is that much of the information for assessing landflow impact and alternative consequences is based on the perceptions of the key informants. There is little supportive or auxiliary information to supplement or verify the positions taken by these respondents.

Chapter Four

Results

Chapter Four

Results

The results of the two surveys and secondary data analysis are presented in this chapter. First, Sanpete County and the three communities during the prelandflow period are examined. This analysis is followed by a discussion of demographic differences in the three communities revealed by the mailed survey. The next focus is the impact of the landflow on the social-psychological makeup of the residents to the community, and economic indicators. Once the impacts are presented, a discussion and evaluation of the alternatives is undertaken.

Prelandflow Sanpete County

All three of the communities surveyed are located in Sanpete County: a county settled in the late 1840's. By the 1850 census there were 365 inhabitants in the Sanpete area. That figure grew rapidly until there were 16,313 persons in the county by 1900. The growth continued to 1920 when there were 17,505 residents. The twenties witnessed a population decline followed by a relatively constant population of 16,000 in the thirties. The decline in numbers started again in the forties and continued until the 1970 census when there were 10,976 inhabitants. Estimates of the 1975 population place it at 13,000, about where it was in 1950. Population density is 6.9 persons per square mile, compared with 10.8 for the entire State of Utah.

The population decline has not been uniformly distributed among all classes of residents. It appears to be primarily an emigration of the

young. This phenomenon is reflected in Table 4.1, showing that the percent of Sanpete residents in the 20 to 44 year-old categories is much lower than that of the State.

TABLE 4.1 Percentage Age Distribution of Population: Sanpete County 1960 and 1970

Age	1960		1970		Percent Change: 1960-1970	
	Sanpete	State	Sanpete	State	Sanpete	State
0-4	10.0	14.2	8.3	10.6	-1.7	-3.6
5-14	22.4	23.4	19.9	22.7	-2.5	-0.7
15-19	10.2	8.5	12.5	11.0	2.3	2.5
20-24	3.8	9.8	6.4	9.3	2.6	-0.5
25-44	17.9	24.4	16.2	22.4	-1.7	-2.0
45-64	22.3	16.0	22.0	16.7	-0.3	0.7
65+	13.4	6.7	14.7	7.3	1.3	0.6

Also, the percentages in the oldest age category are much higher than those of the state. An interesting picture emerges: the county has proportionately fewer people than the state in all but one of the age groupings up to 44 years of age. Sanpete County also has much higher proportions in groupings from 45 years and up.

The county has experienced an increase in the number of households from 1960 through 1970. In 1960 there were 3350 households compared with 3436 in 1970; an increase of 2%. Conversely, the population per household declined by 5.2% over the same period from 3.24 persons per household to 3.07.

In addition to population size and age, income levels of Sanpete County indicate a significant differential from that for the state. Median

family income in 1970 was $6409 compared to $9320 for the state and $6951 for the Central Utah Planning District. (This district is a six-county area of Central Utah whose boundaries have been determined by the Governor, and of which Sanpete County is a part.) Per capita income was $3420 in the county for 1974 compared to the state's $4468. When the "poverty" end of the income scale is examined, 17.3% of the families in the county were below established poverty levels in 1970 compared to 9.1% in the state and 15.1% for the planning district. Twenty percent of the Sanpete families with incomes below poverty level were receiving public assistance. This figure is very close to the state percentage of 20.9. Public assistance in 1970 was received by 5.2% of Sanpete County residents as compared to the state average of 5.0%. These figures declined in 1976 to 3.7% for the county and increased to 5.5% in the state. Unemployment in 1976 was 9.3% for Sanpete and 6.4% for the state. Non-agricultural employment declined from 1974 to 1975 by 4.5% while the state increased by 1.1%.

Median educational attainment was 12.3 years for the county and 12.5 years for the state in 1970. In Sanpete County, 58.1% of the persons over 25 have completed high school as compared to 67.2% statewide.

Employment is concentrated in light manufacturing, government, and agriculture. Approximately 51% of the land in the county is devoted to agriculture. There were 790 farms in 1970, 27% of which were operated as part time enterprises. In the same year there were 890 persons employed in manufacturing, and 808 in government.

When employment is examined by occupational category, the 1970 census indicates that 31% were employed in agriculture or forest-related occupations, 23% are professionals, and 18% of those employed are involved in manu-

facturing. Wholesale trades accounted for 15% of the occupations, construction employed 7%, while personal services involved 5%. The remaining 2% in transportation.

In summary, Sanpete County is dependent upon agriculture, government and light manufactures for employment. There is an unusually large number of persons defined as below accepted poverty levels, but relatively few opt for public assistance. The population is generally older than is typical of the state. Population numbers have declined for the past three decades, but recent estimates indicate a reversal of the trend.

When the focus is placed on the three cities of interest to this study, Table 4.2 indicates that two of the three cities have experienced increased population since 1960, though none of them is at its 1950 population level. Mount Pleasant has experienced population decreases for over two decades.

TABLE 4.2 Population

City	1950	1960	1970	% Change 1960—1970
Gunnison	1144	1059	1073	1.3
Manti	2051	1739	1803	3.7
Mt. Pleasant	2030	1572	1516	-3.6

Table 4.3 indicates that the three cities are similar in median age and age distribution. Manti has slightly older inhabitants, but the difference does not approach the magnitude of the difference between the state (23.1 years), and the three cities. The sex distribution for

Gunnison is different than that of the other two communities.

TABLE 4.3 1970 Sex-Age Distributions of Three Communities

City	Sex		Age		
	M	F	M_d	%<18	%≥65
Gunnison	541	532	29.5	38.5	14.3
Manti	869	934	31.1	36.1	17.9
Mt. Pleasant	722	794	34.4	34.6	14.6

Unfortunately, the 1970 census does not provide useful additional data for communities as small as these three. The same is true of the Statistical Abstracts of Utah. Hence, it is difficult to assess other potentially significant differences. It is, however, clear that all three are trade and manufacturing centers located in an agricultural setting. They have experienced declining population, and they exhibit a higher level of poverty than is typical of the state.

Current Demography of the Three Communities

Given the present methodology, it is important to determine the degree to which the sample results reveal demographic differences between the three communities. If there are clear differences, they could obscure or confound analysis of the landflow impact.

Table 4.4 presents the means, variances, and results of tests for statistical significance from the mailed survey. The F reported for means is computed for analysis of variance. The F for variances is found by dividing the largest of the three variances by the smallest. The results indicate that the three cities cannot be assumed to differ

TABLE 4.4 Demographic Differences Between the Three Cities

Variable	Gunnison	Manti	Mt. Pleasant	F
Mean-Age	56.47	57.63	54.29	0.45
Variance-Age	280.14	402.24	343.54	1.44
Mean-Education	11.94	12.48	11.96	0.40
Variance-Education	9.75	14.60	10.44	1.50
Mean-Years in Residence	33.42	33.53	29.40	0.48
Variance-Yrs. in Residence	524.83	708.17	653.39	1.35
Mean-Occupational Prestige	25.22	32.25	27.06	1.05
Variance-Occ. Prestige	578.49	709.27	602.62	1.23

in mean or variance for age, education, years in residence, or occupational prestige. The technique reveals the same lack of differences in income, but it is not presented because of a high rate of nonresponse on this item. The table shows that all these communities have older adult populations with a high school education and three decades in residence in the community of current residence. Occupational prestige is measured on a scale from 0 to 100. The results indicate the typical respondent is either employed in agriculture or a blue collar occupation.

The analysis indicates that there are no differences in the three communities on eight of the demographic measures employed.

Slide Impact on Social-Psychological Makeup of the Individual

The literature reviewed in Chapter Two indicates that one could expect some social-psychological changes in residents of Manti as a consequence of the landflow and its perceived threat to residents. The results are divided into the general categories; personal well-being, values,

attitudes towards others, feelings of stress, and landflow perceptions. In each case it is assumed that if there is an impact due to the landflow, residents of Manti will presumably show the greatest impact, Gunnison the second greatest, and Mt. Pleasant little or none.

A. Personal Well-Being

Four items, were used in the mailed questionaire to ascertain an individual's feelings of well-being. Two sought perceptions of current well-being. One asked the respondent to report how happy he was on a ten-point scale from very unhappy (1), to very happy (10). The other item asked how good a life he or she was experiencing at present. It also employed a ten point scale. The two remaining items asked the respondent to rate the goodness of his life, past and future on the same ten-point scale as the second item. The results are presented in Table 4.5. The figures represent the median response. The tests of significance reveal that there are no systematic differences between the three communities. However, it is interesting to note that between six and ten percent of the Manti sample always ranked themselves lower than any of the respondents in the other two communities.

TABLE 4.5 Personal Well Being

Item	Very Negative 1	2	3	4	5	Neither 6	7	8	9	Very Positive 10	Significance
Happiness								* x o			NS
Present Life Quality							* ox				NS
Past Life Quality						*ox					NS
Future Life Quality								* x o			NS

Key: *Gunnison xManti o Mt. Pleasant

Even if there are no differences in the general indicators, it was assumed there may be some differences or impacts on specific dimensions of goodness of life. As a consequence, the data were broken down along two dimensions to determine whether any impacts may exist.

The first aspect of well-being to be examined in some detail included a variety of feelings; excitement, pleasure, boredom and pride. The median responses are presented in Table 4.6. They again indicate that there are no significant differences. Even the slight differences encountered could not be attributed to the landflow because Manti and Mt. Pleasant, the most and least affected, are closest together in terms of their median scores.

TABLE 4.6 Dimensions of Personal Well-Being: Median Ratings

Item	Never 1	Once 2	Few 3	Several 4	Most 5	Always 6	Significance
Feel Excited				* ⊠			NS
Feel Pleased				*⊠			NS
Feel Bored		o x	*				NS
Feel Proud			*	x o			NS

Key: * Gunnison x Manti o Mt. Pleasant

The second aspect of well-being focused on satisfaction with a variety of situations and activities, rather than psychological states. The dimensions of satisfaction selected included satisfaction with home, marriage, family, standard of living, education, work and status. The results presented in Table 4.7 indicate that only one item, education, approached a traditional level of significance. Given the lack of other differences, this one should not be interpreted as a consequence of the landflow.

TABLE 4.7 Aspects of Satisfaction: Median Ratings

Item	Dis-Satisfied 1	2	Neither 3	4	Satisfied 5	Significance
Satisfaction with:						
Home				o*		NS
Marriage				* x o		NS
Family					xo*	NS
Standard of Living				ø		NS
Education			o *	x		.06
Work				* xo		NS
Status				*x o		NS

Key: * Gunnison x Manti o Mt. Pleasant

B. Values

Data concerning values of the residents were gathered from both the mailed questionnaire and from the key informant survey. The mailed questionnaire asked the respondent to rate the importance of twelve value dimensions as developed by Scott (1965). The key informants were asked to rate the importance of a similar set of values and to indicate the magnitude of the landflow impact on them.

The mailed survey items were scaled from not important (0), to extremely important (6). The results are presented in Table 4.8, where the mean ratings are displayed. The results show that the communities differ significantly as tested by analysis of variance, on three of the twelve dimensions. The residents of Manti value intellectualism and kindness more than those of Mt. Pleasant. The residents of Gunnison fall in between. The finding concerning kindness is consistent with disaster research which has discovered an increase in kindness and the growth of a therapeutic community following a crisis. The residents of Manti and Gunnison also appear to value social recognition less than those of Mt. Pleasant.

TABLE 4.8 Value Dimensions: Ratings of Importance by Residents

Item	Not Important 1	2	3	4	5	Extremely Important 6	Significance
Intellectualism				o * x			.05
Kindness				o	*		.05
Social Skills					o x *		NS
Loyalty					* o x		NS
Education					o x *		NS
Physical Conditions					x o *		NS
Social Recognition			* x	o			.05
Honesty					▣		NS
Religion					▣		NS
Self Control						▣	NS
Creativity				▣			NS
Social Independence					▣		NS

Key: * Gunnison x Manti o Mt. Pleasant

The key informant ratings were on a scale which was identical to that for the mailed survey. Table 4.9 presents the median ratings for each item.

TABLE 4.9 Value Dimension: Ratings of Importance by Key Informants

Item	Not Important 0	1	2	3	4	5	6	Extremely Important 7	Significance
Economic Development					o x	*			NS
Individuality					▣	*			NS
Material Goods				x * o					NS
Meaningful Work					* x o				NS
Religion						o x *			NS
Academic Achievement					o x	*			NS
Community					x o	*			NS
Physical Fitness				o x	*				NS
Status				x	o *				.05
Environmental Quality				o x *					NS
Family						x o *			NS

Key: * Gunnison x Manti o Mt. Pleasant

Only one item reveals a statistically significant difference: importance of status. Statistically, there is no reason to assume that the landflow has had any influence on the key informant's value ratings.

They key informants were also asked if they felt the landflow had influenced the values of the residents of their community. The responses were scaled from -3 (much worse), to +3 (much better, with 0 being no change). The median ratings are presented in Table 4.10. Two of the value dimensions show statistically significant differences: economic development and academic achievement. In both cases Gunnison and Mt. Pleasant have

TABLE 4.10 Value Dimension: Landflow Impact Perceived by Key Informants

Item	Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better	Sig.
Economic Development			x	*o				.025
Individuality				x o *				.10
Material Goods				x o*				NS
Meaningful Work				ox *				NS
Religion				⊠ *				NS
Academic Achievement				⊠ *				.025
Community				x *o				NS
Physical Fitness				⊠				NS
Status				⊠*				NS
Environmental Quality				o ⊠				NS
Family				o x *				NS

Key: * Gunnison x Manti o Mt. Pleasant

scores which approximate each other. Manti's median is, however, below the other two. It is quite reasonable to assume that the value of economic development is viewed by Manti leaders as having been negatively influenced by the landflow. It is a common theme throughout their responses and forms part of a consistent pattern to be developed. It is interesting to note

that only Manti's median for economic development shows a clearly negative rating while Mt. Pleasant and Gunnison have ratings on that value which are just as clearly positive. This may suggest that leaders in the two communities may believe that the importance of economic development has increased as a result of the landflow. The differences in median ratings of academic achievement are not readily interpretable as having arisen as a consequence of the landflow.

In summary, there is no strong evidence that values have been impacted by the Cottonwood Landflow, except that some shifts may have occurred in the importance of economic development where it is perceived to have changed for the worse in Manti and for the better in Gunnison and Mt. Pleasant.

C. Attitudes toward Others

The respondents to the mailed survey completed six items concerning their beliefs about mankind in general: mankind's willingness to serve, to be honest, to act rationally, to be altruistic, to act morally, to act conservatively, and to be independent. The results, in Table 4.11, indicate that there are two items with statistically significant differences

TABLE 4.11 Attitudes Toward Others

Item	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Signif.
Service						x o*	NS
Honesty				o	x*		.05
Rationality					x*o		NS
Altruism				o	x *		NS
Universal Goodness					x o *		.05
Conservatism					⊠ *		NS
Independence						⊠ *	NS

Key: * Gunnison x Manti o Mt. Pleasant

in their medians: mankind's basic honesty, and mankind's goodness. Honesty is rated much higher by Manti and Gunnison. It may be a reflection of the formation of the therapeutic community, but there is no supportive evidence for this interpretation in the other ratings. The differences in goodness do not seem attributable to the landflow since the ratings show Mt. Pleasant between the other two cities.

D. Psychological Stress and the Landflow

Research into the effect of environmental hazards and disasters suggests that stress is a common psychological state of exposed persons. Stress is an emotional state of uneasiness and upset. It is often associated with mental illness, physical abuse of relatives, and aggressions toward society. Respondents to the mailed survey completed four items which are commonly used to indicate stress: the frequency with which a person feels overloaded, feels uneasy, has a headache, and is upset. The results of the analysis are presented on Table 4.12. There are

TABLE 4.12 Psychological Stress and the Cottonwood Landflow

Item	Never Once Few Several Most Always	Significance
Feel Overloaded	*o x	.02
Uneasyness	o x*	.02
Headache	o *x	.01
Upset	o * x	.03

Key: *Gunnison x Manti o Mt. Pleasant

statistically significant differences between the ratings on all of the items. Manti's median is almost uniformly higher than the other two cities, but Gunnison's rating is only slightly below that for Manti on all but one item: overload. The evidence is consistent in suggesting

that the landflow may have induced some stress in Manti not present in the other two communities.

E. Hazard Perception

It has been suggested in the literature review that persons who experience stress and are exposed to one type of hazard become sensitized to other threats from their environment. The respondents to the mailed survey were asked to indicate the degree to which they felt each of twelve hazards was a threat to their lives. The results are presented in Table 4.14. The median ratings for Manti were higher than the other two cities for ten of the twelve items. Gunnison's ratings were highest or second highest in nine of the twelve. The median for Mt. Pleasant was lowest in eight of the twelve. Six of the twelve items are ranked by the communities

TABLE 4.14 Perceptions of Hazards

Hazard	No Threat 0	1	2	3	4	5	6	7	8	Huge Threat 9	Signif.
Air Pollution		o * x									.05
Auto Accident			o * x								.05
Drought							o*x				NS
Earthquake			xo*								NS
Epidemic		o *x									.05
Flood		*		o x							.01
Fire				ox*							NS
Radiation		*ox									NS
Riot	o* x										.01
Tornado	⊛x										NS
War		o * x									NS
Water Pollution			o *								.01

Key: * Gunnison x Manti o Mt. Pleasant

in such a way that the differences are statistically significant: They include air pollution, auto accident, epidemic, flood, riot, and water pollution. The evidence is relatively consistent in suggesting that the experience with the landflow has sensitized Manti residents to other hazards. Given present conditions, the rating of drought in all three communities provides a useful validity check. It is by far the greatest concern of the twelve hazards. (The current water year is apparently to become characterized as the most severe drought year in the recorded history of Sanpete County.)

F. Summary

Several aspects of a resident's social-psychological makeup were examined to assess impact of the Cottonwood Landflow. It was found that no landflow impact can be found for general and specific aspects of personal well-being. Similarly, the landflow did not appear to have had an influence on the residents' value system, except that the importance of economic development has declined in Manti and increased in Gunnison and Mt. Pleasant. The landflow does not appear to be related to the residents' attitude toward others. Further, the landflow does appear to have influenced residents' level of stress and perception of the degree of threat from other hazards. Manti residents consistently exhibit higher levels of stress and heightened sensitivity to hazard.

Impact of the Cottonwood Landflow on the Quality of the Community

In this section of the report the focus is upon the residents' perceptions of the impact of the landflow on the quality of their community as a place in which to live. In the economic analysis the objective indicators are discussed.

The respondents to the mailed survey were asked to rate their community as a place to live, whether it was the best, average, or the worst on a nine-point scale. They were also asked to rate it for the past and future. The median scores are presented in Table 4.15. The analysis indicates that Manti residents rate their community at a higher level over the past than do the other two. It is possible that the post-landflow difficulties have led them to think of the past as relatively desirable. However, the evidence for this is weak, especially in light

TABLE 4.15 Median Ratings of General Quality of the Community

Item	Worst 1 2 3 4 Average 5 6 7 8 Best 9	Significance
Past	*o x	.01
Present	*o x	NS
Future	x*o	NS
Improvement	x*o	NS
Optimism	x *o	.10

Key: * Gunnison x Manti o Mt. Pleasant

of the fact that their rating for the present is higher than for the past and they have even higher expectations for the future. Improvement from past to present can be assessed as the difference between the respondents' ratings at those two points in time. Optimism can be assessed as the difference between each respondent's present rating of the community and the rating of the future. Optimism does produce a difference which is statistically significant with optimism being lowest in Manti and highest in Mt. Pleasant. The landflow may have created conditions related to this lower level of optimism.

Table 4.16 explores changes in the quality of certain community conditions. It reveals that there are no significant differences, but Manti has the lowest median score for all but one of the conditions: employment opportunities.

TABLE 4.16 Changes in the Community

Item	Much Worse	Worse	Slightly Worse	Slightly Better	Better	Much Better	Signif.
Religion				x o *			NS
Teen Behavior			x o *				NS
Respect for Law			⊠ *				NS
Neighborliness				x* o			NS
Standard of Living					⊠ *		NS
Employment Opportunities			o* x				NS

Key: * Gunnison x Manti o Mt. Pleasant

In an attempt to probe more deeply and to obtain greater detail, respondents to both surveys were asked to rate their community on a variety of specific conditions. Table 4.17 presents median ratings for the mailed survey. Only one of the differences in ratings is both statistically significant and attributable to the landflow: growth potential. Manti is rated below average, but the other two cities have average ratings.

The key informants rated a different set of conditions. The mean

TABLE 4.17 Quality of Selected Community Conditions: Mailed Survey

Item	Much Below Average	Below Average	Average	Above Average	Much Above Average	Significance
Economic Development		o x*				NS
Employment Opportunities		o x*				NS
Family Environment				* x		NS
Fire Protection			x* o			NS
Growth Potential		x	o*			.01
Housing		ox*				NS
Local Government			o*x			NS
Neighborliness			*	ox		NS
Police Protection			* x	o		NS
Recreational Facilities		* x				NS
Schools			o * x			NS
Sewage Disposal		o x	*			.01
Streets and Sidewalks		o*x				NS
Telephone Service		x *	o			.01
Water Supply			o * x			NS

Key: * Gunnison x Manti o Mt. Pleasant

ratings and significance for analysis of variance are presented in Table 4.18. Eight of seventeen items had statistically significant differences. Manti ranked lowest on three of the eight: health facilities, religious activity, and property values. The latter was often related to the landflow by the key informants. Manti ranked highest on one item, water quality. It may be due to the improvements in the water system required by the landflow and its aftermath.

TABLE 4.18 Quality of Selected Community Services: Key Informants

Item	Well Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Sig.
Place to Raise Family						ox*	NS
Health & Med. Facilities				x	o	*	.01
Quality of Schools					xo*		NS
Quality of Water				o*	x		.01
Recreational Opportunities				xo	*		NS
Cultural Opportunities			o	* x			NS
Employment for Young		o x	*				.01
Earn Liveable Income		⊠	*				.01
Adeaquacy of Police				*xo			NS
Shopping Facilities			* ox				NS
Local Government				ox*			NS
Reliability of Local People					⊠ *		NS
General Attitude				o	x *		.01
Crime Rates			⊠ o				NS
Religious Activity					xo	*	.05
Moral Conduct					o x *		.05
Property Values			x	o*			.05

Key: * Gunnison x Manti o Mt. Pleasant

The key informants were also asked to indicate the degree to which the landflow had influenced the quality of the conditions presented above. Table 4.19 presents mean ratings and the significance of differences. Six of seventeen items reveal significant differences: water quality, recreational opportunities, employment for the young, earning a liveable income, local government, and property values. Two of these, water quality and quality of local government, have improved. It appears that the

TABLE 4.19 Impact of Landflow on Quality of Selected Community Services: Key Informants

Item	Highly Negative 1	2	3	No Impact 4	5	Highly Positive 6	7	Significance
Place to Raise Family				x*o				NS
Health and Medical Facilities				x*o				NS
Quality of Schools				*				NS
Quality of Water				o	x			.01
Recreational Opportunities			x	* o				.05
Cultural Opportunities				*				NS
Employment for Young			x	o				.01
Earn Liveable Income			x	o*				.01
Adequacy of Police				*				NS
Shopping Facilities				*				NS
Local Government				*o	x			.05
Reliability of Local People				*				NS
General Attitude				x*o				NS
Crime Rates				*				NS
Religious Activity				o	x			NS
Moral Conduct				*				NS
Property Values			x	o				.01

Key: * Gunnison x Manti o Mt. Pleasant

initiatives of local government with respect to the landflow have led to perceptions of good local government regardless of the outcome of those efforts. The major negative impacts of the landflow are seen as primarily economic: employment, income, and property values. The fourth, recreation, shows the smallest shift.

In addition to the services listed above, both surveys asked the respondents to rate the impact of the landflow on another set of community activities. The median ratings and the significance of difference measures for the mailed survey are presented in Table 4.20.

TABLE 4.20 Landflow Impact on Community Activities: Mailed Survey

Item	Extremely Negative -3	-2	-1	No Impact 0	+1	+2	Extremely Positive +3	Significance
Agriculture			x	* o				NS
Business				x * o				NS
Culinary Water				*ox				NS
Electrical Power				*				NS
Employment				x * o				.05
Environmental Hazards				x *o				.05
Environmental Quality				xo*				NS
Fish & Wildlife				x o*				NS
Flood Control				o*				NS
Home Gardens				x *				.05
Industry				x *o				.01
Irrigation Water				x *o				.01
Land Sales				x *				.01
Local Government				o* x				NS
Recreation					* x			NS

Key: * Gunnison x Manti o Mt. Pleasant

Six of the fifteen items indicate significant differences: all six of which show perceptions of negative impact among Manti respondents. The activities where the major negative impacts for Manti appear to have occurred include employment, environmental hazards, home gardens, industry, irrigation water, and land sales. It is interesting that several possible impacts which have received official notice (agriculture, electrical power, environmental quality, fish and wildlife, flood control, and recreation) are not perceived negatively by the residents.

The key informants were first asked to state what they felt the landflow impacts were and were then asked to evaluate the impact of the

landflow on the same list of items given in the mailed survey. The concerns expressed by at least twenty percent of the Manti key informants were over agriculture, water quality, industry, irrigation, and land sales. Table 4.21 presents the ratings and statistical significance values. Only

TABLE 4.21 Landflow Impact on Community Activities: Key Informants

Item	Extremely Negative -3	-2	-1	No Impact 0	+1	Extremely Positive +2	+3	Significance
Agriculture		x		*o				.01
Business			x	* o				.01
Culinary Water				*x o				NS
Electrical Power			x	*o				.10
Employment			x	o*				.05
Environmental Hazards			x	*o				.01
Environmental Quality			x	*o				.01
Fish and Wildlife			x	* o				.01
Flood Control			x	* o				.10
Home Gardens			x	*o				.01
Industry		x		* o				.01
Irrigation Water			x	* o				.01
Land Sales			x	* o				.01
Local Government				x * o				.05
Recreation				x* o				.10

Key: * Gunnison x Manti o Mt. Pleasant

culinary water was not perceived to have been negatively impacted by the landflow. All other items show a statistically significant difference between Manti and Mt. Pleasant. Gunnison, typically, falls between the other two, but, closer to Mt. Pleasant. The activities perceived to have been most impacted are agriculture, business, environmental quality, fish

and wildlife, industry, irrigation water and land sales.

The key informants perceive many more and much greater impacts than the residents in general. There are at least two possible reasons for this fact. It may be that the key informants are better informed and more attentive to the problem. They have more access to information, will have been more involved in hearings about the landflow and may have made key decisions concerning responses to the landflow. Also, many of the key informants have more interests at stake, either economic, political, or psychological. These are the people whose lives were and are most directly affected by the potential and real problems of the landflow.

In summary, the landflow does not appear to have influenced general ratings of the quality of Manti as a community in which to live. In addition, in terms of the ratings of the quality of the conditions in the community, only perceptions of the potential for economic development and property values appear to have been diminished as a consequence of the landflow. The quality of culinary water is perceived as being better in Manti than the other two communities. The surveys reveal that both residents in general and key informants believe the landflow has influenced Manti water quality and local government. These factors are perceived to have improved. However, several economic activities are perceived to have gotten worse, including employment for the young, income, property values, industry, and business. Agriculture is perceived as having suffered due to the landflow. Noneconomic activities such as recreation, home gardens, and environmental quality are also seen as having been unfavorably affected. The key informants were more prone to believe such impacts had occurred than were the mailed survey respondents.

Impact of the Cottonwood Landflow: Linkages to the Community

The ties of the resident to his community and groups in the community can be divided into those which are emotional and those which are behavioral. Behavioral ties include reading newspapers, belonging to voluntary groups, visiting friends and relatives, and doing things as a family.

Table 4.22 presents the mean scores for several behavioral ties and the results of computer runs on analysis of variance. Manti residents appear to be more closely tied into the mass media than are residents of the other two communities. There are no significant differences between the three communities on the other dimensions examined.

TABLE 4.22 Behavioral Linkages to the Communities

Item	Mt. Pleasant $\bar{X}$	Gunnison $\bar{X}$	Manti $\bar{X}$	Signif.
Non-Local Publication	2.02	2.43	2.56	.05
Local Publications	0.32	0.30	0.45	.10
Listen to News	12.05	12.77	29.39	.10
Memberships: Voluntary Orgs.	1.34	1.65	1.41	NS
Visit Friends/Week	1.72	1.63	1.49	NS
Visit Relatives/Week	1.98	1.69	2.29	NS
Number of Relative Here	9.62	10.80	13.17	NS
Pct. of Friends Living Here	49.19	50.27	55.62	NS
Family Activities	4.94	5.10	5.39	NS

Psychological linkages to the community include feelings of attachment and loyalty to it. Two indicators of such attachment were included in the mailed survey and four in the key informant interviews. Table

4.23 presents results for the mailed survey indicating that there are no significant differences between the three communities. Table 4.24 reveals some statistically significant differences, but they cannot be attributed to the landflow.

TABLE 4.23 Psychological Linkages to the Community: Mailed Survey

Item	Mt. Pleasant Median	Gunnison Median	Manti Median	Significance
Live here rest of life	5.04	4.71	4.91	NS
Feelings about being here	4.76	4.83	5.07	NS

TABLE 4.24 Psychological Linkages to the Community: Key Informants

Item	Mt. Pleasant $\bar{X}$	Gunnison $\bar{X}$	Manti $\bar{X}$	Signif.
Feel a Part of Community	5.26	5.31	5.09	NS
Willingness to Move	3.61	2.37	3.20	.05
Change in Willingness to Move	4.16	3.71	4.31	NS
Cooperativeness	4.30	5.82	4.77	.05

In summary, the ties of a person to his community do not appear to have been influenced by the landflow.

Economic Impact of the Cottonwood Landflow

In attempting to assess the economic impact of the landflow, two data sources were relied upon. As has already been noted, there were questions in the key informant interview schedule which asked for their opinion in areas where they had a high level of expertise. In addition, secondary

data were obtained from the cities designated in the study, Sanpete County officials, the Central Utah Planning District and the State of Utah. Unfortunately, much of the information which would be sensitive enough to reveal the economic impacts of the landflow is either not available at the city level or not available in small and frequent enough time intervals.

The analysis can be divided into two major sectors: Impact of the landflow on the private sector and the impact on public finances.

In evaluating the impact of the landflow on the private sector, the analysis was broken down into six areas: industry, business and commerce, banking and finance, real estate, construction, and agriculture.

Perhaps the economic impact most frequently mentioned by the key informants was related to industry. While there was no evidence encountered to substantiate claims that existing industry had left the community, reduced their scale of operations, or went bankrupt due to the landflow, there is good evidence that the development of an industrial park did not occur as a result of landflow threat. Informants also indicated that there were at least three manufacturing enterprises which did not locate in Manti as a consequence of the landflow. Some of these impacts will be reviewed in the discussion of banking and finance. Some key informants in Mt. Pleasant indicated the development of an industrial park there received a positive stimulus from the landflow. (The potential Manti developers apparently transferred their planning to Mt. Pleasant.)

In the area of business and commerce, there is some evidence that business sales growth in Manti did not keep pace with that of the other two cities. Manti sales, as reported in the key informant interviews, increased by 14 percent from 1973 to 1975. However, Gunnison increased by

22 percent, and Mt. Pleasant by 40 percent according to key informants. Taxable sales and sales tax revenue records do not, however, substantiate these data. Table 4.25 presents taxable sales for the three communities. for the period from 1970 to 1976. At the level of annual sales, there is a pattern seemingly attributable to the landflow. Most key informants

Table 4.25 APPROXIMATE TAXABLE SALES AND PERCENT INCREASE (decreased)

City		1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Manti:	Sales	2,667,000	2,872,000	3,282,000	3,631,000	4,244,000	4,659,000
	Percent Increase	--	7.2	14.3	10.6	16.9	9.8
Mount Pleasant:	Sales	2,872,000	3,097,000	3,467,000	3,839,000	3,877,000	4,542,000
	Percent Increase	--	7.1	12.7	10.7	1.0	17.2
Gunnison:	Sales	4,513,000	5,333,000	5,641,000	5,949,000	6,318,000	7,619,000
	Percent Increase	--	18.2	5.8	5.5	6.2	20.6

Source: Utah State Tax Commission; Biennial Reports

felt that there was a brief lull in business created by the landflow events, but that the recovery has been virtually complete. In addition the Manti key informants tended to feel that their businesses had suffered losses in the sense that industrial growth anticipated through the industrial park did not materialize. Hence, their loss was not a real loss, but a relative one.

A similar situation was experienced in banking. Interviews with a Manti banker indicated that he believed the landflow had hurt his business because of the loss of the three new businesses which were planning to move into Manti. He estimated that each business would have ultimately

employed approximately 300 people. He believed that the loss of the businesses had cost his bank 300 loans and an equal number of savings accounts.

There are not enough banks and savings and loan operations in the area to allow a reliable statistical analysis. In addition, each bank draws from a wide catchment area.

A financial indicator which indicates to some degree the impact of the landflow is a financial dimension closely related to the landflow itself: flood insurance. At the height of the landflow problem, flood insurance was made available by the Federal Government and strongly recommended. Very few purchased it. Most of those who did were forced to do so by their mortgagers. Those who did so voluntarily have generally now let it lapse. There were 24 policies sold at the time they were made available, but 12 policies have now lapsed.

In an effort to determine the influence of the Cottonwood Landflow on real estate, realtors, the Sanpete County Recorder, and one employee of the Recorder's Office were interviewed. A well-informed Manti resident indicated that the news and publicity surrounding the landflow had caused a drop in the real estate business, but that it was now near normal. The County Recorder agreed. A realtor in the county suggested that people were not now buying land away from the Manti area due to the landflow. Again, it was suggested that a specific impact occurred when the proposed industrial park and the three industries planning to come to Manti changed their plans.

The responses to questions in the key informant interviews for realtors also indicate that the sales did go down briefly in the first landflow year, but that they seemed to have recovered. Many stressed that the economic

recession, drought and differing distances from the Wasatch Front are more important in changes in land sales than was the landflow. They indicate that these events, plus the small number of sales make any data comparison impractical.

The evidence from the construction industry reveals a pattern which is consistent with the other data. The key informants involved in construction indicated that there was a brief drop in construction during the landflow's active movement period which is probably attributable to the landflow. However, they contend that there has been a general recovery from the landflow effects. The dollar value of residential construction for 1973 to 1976 is presented in Table 4.26. It reveals that

Table 4.26 RESIDENTIAL CONSTRUCTION

Year	Gunnison	Manti	Mount Pleasant
1973	350,000	190,000	192,000
1974	323,000	200,000	168,000
1975	120,000	125,000	425,000
1976	547,000	207,000	201,000

the figures for all three communities have experienced erratic jumps and dips, probably due to the small number of new dwellings being built and due to the general economic slowdown. It does not suggest a landflow impact.

The final economic activity to be considered in the private sector is that of agriculture. An interview with the agricultural extension agent in Sanpete County indicated that the only problem experienced from

the landflow was silting which had been caused by erosion of the toe of the landflow body. Due to the drought and current landflow stabilization, that problem was not viewed as serious at the present time.

However, there is some indication that the value of agricultural land has not recovered from the landflow effects. The key informants in agriculture were asked to place a per-acre value on their cropland. Table 4.27 reveals that the increase in value per acre in Manti has not kept up with that for Mt. Pleasant or Gunnison. As might be expected,

Table 4.27 VALUE PER ACRE OF AGRICULTURAL LAND

City	1973	1976	% Change
Mount Pleasant	600	1050	0.75
Gunnison	430	628	0.46
Manti	583	792	0.36

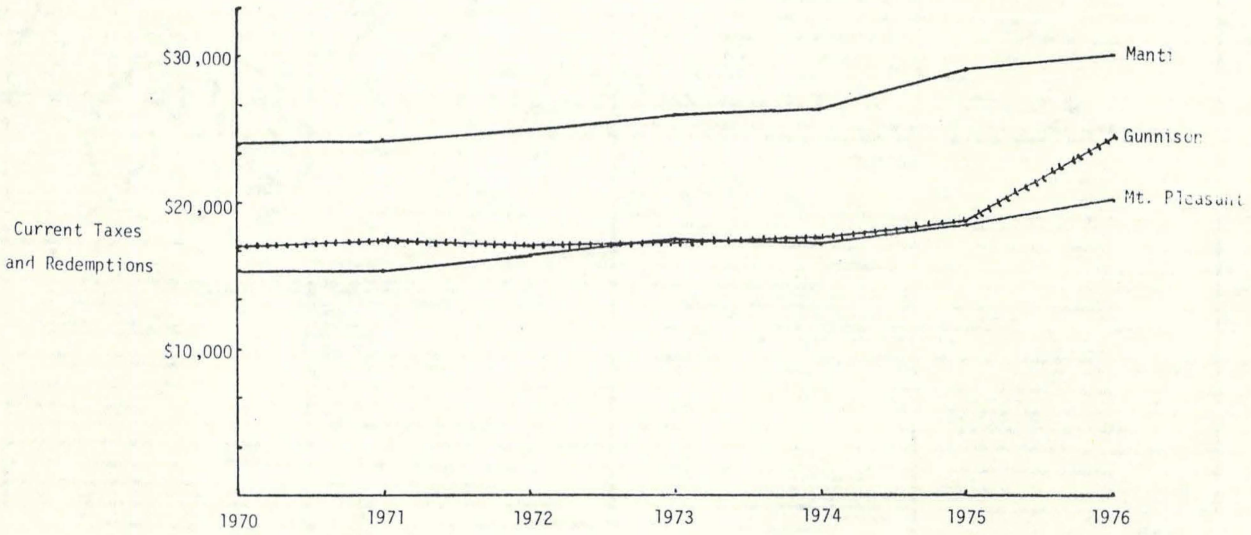
with the involvement of other factors, Mt. Pleasant area agricultural land values have increased more rapidly than those other two cities, but Gunnison is also ahead of Manti. The key informants identified three persons who claimed the landflow was their reason for leaving agriculture.

When the focus is shifted from the private sector to the public, there are several types of information that provide insights into the impact of the landflow. One is simply the direct cost to the city of the remedial actions taken. Prior to the landflow the city had virtually no bonded indebtedness and a small surplus in the city's total budget. There were plans to use the surplus to make improvements in city streets, sidewalks and water supply. The city council's account of budgeting prior to the landflow reveals a relatively simple process in which most standard demands

from the various departments were met without requiring cuts. At the same time, small surpluses were being built up. When the landflow occurred, the process sharply changed. The surplus was spent on moving the city's water line. In addition, according to the Manti City Recorder, the city was bonded to capacity at $694,655.00 as of June, 1976. The indebtedness was incurred to meet the necessity of moving the city water line away from the landflow to the other side of the canyon. The bonds will not be completely retired until 1995.

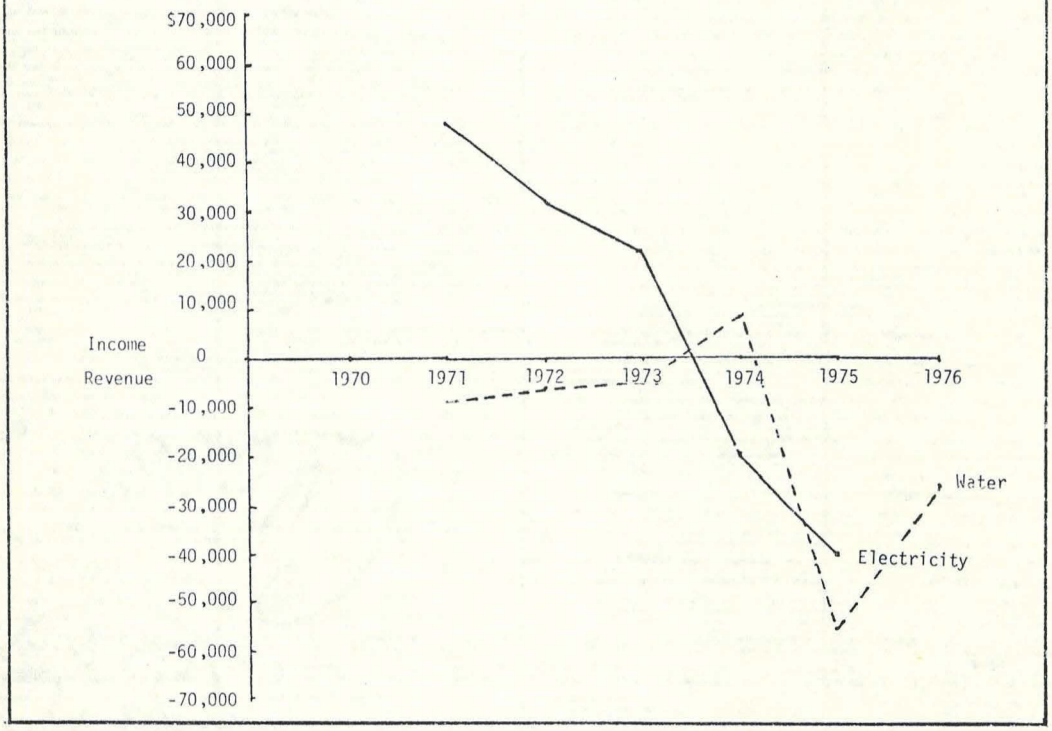
It is also important to examine the possibility that city revenues were affected by the landflow as a secondary effect of the direct impact on the local economy. Figure 4.1 indicates little or no evidence that the land flow influenced current taxes and revenues. The pattern in Manti is virtually identical to that for Mt. Pleasant. It is similar to the pattern in Gunnison, except for 1976.

Figure 4.1 Landflow Impact on Current Taxes and Redemptions



The same lack of impact cannot be asserted for income the city of Manti receives from its electrical generation and water facilities. Figure 4.2 indicates that electricity produced a net revenue for 1971, 72, and 73. It should be noted that electrical revenues declined in

Figure 4.2 Income to Manti City from Electricity and Water



each of these years. Had that decline continued into 1974, the revenues would have been between $18,000 and $10,000. However, 1974 experienced a loss of $20,308. In 1975, the decline continued with a loss of $39,930. The loss is partially, if not completely, attributable to the necessity of closing the city's power plant which operated in the canyon below the landflow.

Figure 4.2 also reveals that income revenues from operation of the city's culinary water system produced a deficit of between $5,000 and $10,000 annually from 1971 to 1973. In the first year of the landflow (1974),

income exceeded costs by about $10,000. The net income gain arises largely due to a jump in water sales from $27,408 in 1973 to $43,544 in 1974. Also, most of the increased costs of the water system due to the landflow, did not occur until 1975. Net loss for the 1975 water revenue fund was $55,975, approximately $45,000 more than in 1971, the year with the greatest net loss prior to 1975. 1976 reveals some recovery, but a large net loss, $25,000, was still experienced.

The consequences of the bonding and the loss of revenue are reported by the Manti City Council to be the reason for having to ask some departments to cut back in services offered and to delay some planned improvements in city streets, sidewalks and the water system.

The loss of revenue has not yet resulted in an increased tax levy. Table 4.28 reveals the tax levies for Manti, Gunnison, and Mt. Pleasant from 1970 to 1976. All three have 1975 mill levies which are below those

Table 4.28 TAX LEVIES IN MILLS

City	1970	1971	1972	1973	1974	1975	1976
Manti	90.90	92.40	90.80	88.30	88.70	89.70	89.70
Gunnison	89.90	89.40	87.80	85.30	85.70	86.70	89.70
Mount Pleasant	80.20	81.70	80.10	77.60	78.00	79.00	79.00

for 1970. In addition, the levy for Manti increased 1.40 mills from 1973 to 1976. The Gunnison levy increased by 3.40 mills and Mt. Pleasant by 1.40 mills over the same period. It appears that the city leadership has chosen to cut some services and improvements, rather than to increase taxes.

In summary, the economic impact of the landflow can be evaluated for the public and private sectors. The private sector reveals two principal

impacts. First, there appears to have been a reluctance to open new manufacturing enterprises in the area. The industrial park has been dropped as a consequence and apparently two or three operations decided not to move into Manti. There is little or no evidence that existing enterprises have closed down or left. Second, many of the sub-sectors such as business, construction, real estate, and agriculture appear to have experienced some losses during the period of the landflow and shortly thereafter, but a general recovery seems to have followed. The public sector seems to have been more generally affected. The city of Manti has been forced to issue bonds, has lost some income from water and electricity, and has been compelled to cut back on improvements and services. In addition, local government decision making has been given a much heavier, more difficult burden to carry.

Evaluation of Alternatives

The preceeding sections have identified several dimensions of the impact of the landflow. It was found that Manti residents were experiencing some stress as a consequence. They are also sensitized to other potential disasters such as floods. The key informants perceived negative impacts on virtually every aspect of community economic and political life. The private sector of the economy experienced a temporary downturn in most respects, but appears to have recovered, except for some industrial expansion which did not occur. The public sector of the economy is experiencing problems in budgeting for the services required of local government, meeting bond payments and catching up after the revenue loss following the landflow displacement of the pipeline supplying the hydroelectric power plant and culinary water. The economic difficulty appears to have placed

the public sector under a decision-making overload.

In light of the impacts summarized above, it is important to consider alternative solutions to the landflow problem. Six such solutions were originally identified by the United States Forest Service. Each of these six is described in Chapter One. The key informants were given brief descriptions of each alternative and asked to rate the degree to which each would improve or worsen fifteen dimensions of social and economic life in Manti when compared to the "no action" alternative. The responses were coded from zero, "Much Worse," through four, "No Change," to seven, "Much Better." The mean ratings are presented in Table 4.30 for all key informants and in Table 4.31 for the Manti key informants alone. To assist in reading the tables, a score is enclosed in brackets, provided it is either the highest score for that dimension or it is over 5.5 (a rating of "Better" to "Much Better.")

TABLE 4.30 Impact Ratings: All Key Informants

Item	Alternative					
	1	2	3	4	5	6
Agriculture	5.31	4.96	4.71	4.73	5.26	(5.54)
Electrical Power	5.38	4.39	4.50	4.58	4.82	(5.43)
Employment	5.09	4.61	4.45	4.65	4.78	(5.30)
Land Sales	5.23	4.70	4.62	4.63	4.98	(5.32)
Environmental Hazards	4.89	4.49	4.42	4.38	(5.10)	4.93
Environmental Quality	(4.96)	4.54	4.42	4.50	4.88	(4.96)
Fish and Wildlife	4.72	4.74	4.53	4.45	4.86	(4.96)
Other Recreation	4.53	4.57	4.45	4.38	4.72	(5.00)
Flood Control	5.27	5.22	4.63	4.51	5.04	(5.74)
Industry	5.14	4.83	4.59	4.55	4.98	(5.17)
Irrigation	5.45	5.06	4.90	4.70	4.96	(5.61)
Local Government	4.71	4.33	4.35	4.58	(4.76)	4.55
Municipal Water	(5.00)	4.42	4.35	4.36	4.77	4.89
Water Quality	(5.21)	4.65	4.55	4.45	4.79	5.04
Business	(4.97)	4.63	4.47	4.55	4.72	4.93

The key informants for all three communities generally felt the greatest positive impact would occur under alternative Six, some combination of the other five. Many of the key informants felt that the combination needed should include the pipeline bypass around the toe of the slide and the removal of water from the head. Alternative One received the second most positive ratings. The pipeline bypass alone was rated particularly high for its impact on environmental quality, municipal water, water quality, and business. It was rated just below alternative Six for its positive impact on agriculture, electrical power, employment, land sales, flood control, industry, and irrigation. It was also second to alternative Five on its impact upon local government.

Alternative Five is the third most highly rated alternative. Removing water from the head of the slide is rated as having the most positive impact on environmental hazards and local government. It is second in its improvement of fish and wildlife, and recreation. The remaining three alternatives (alternatives Two, Three and Four), received ratings which indicated some expectation of either "no impact" or small positive impacts for all of the dimensions.

The Manti key informants, people who were the most involved and best informed, generally rate each alternative as having greater positive impact than did the key informants in the other two communities. The ratings for Manti key informants alone are presented in Table 4.31. Alternative One received the most consistently high ratings. All of the dimensions except recreation, local government and municipal works were either given the most positive rating or ratings above 5.50. The most positive ratings were for agriculture, electrical power, land sales, flood control, and irrigation.

TABLE 4.31 Impact Ratings: Manti Key Informants

Item	Alternative					
	1	2	3	4	5	6
Agriculture	(5.64)	5.00	5.00	4.80	(5.65)	(6.00)
Electrical Power	(6.10)	4.32	4.81	4.47	5.20	(5.90)
Employment	(5.29)	4.50	4.63	4.60	4.88	5.22
Land Sales	(5.61)	4.64	4.88	4.60	5.16	(5.80)
Environmental Hazards	(5.36)	4.32	4.50	4.53	(5.36)	5.22
Environmental Quality	(5.25)	4.32	4.56	4.60	5.08	5.00
Fish and Wildlife	(5.14)	4.59	4.75	4.47	4.96	5.11
Other Recreation	4.82	4.46	4.56	4.40	4.88	(5.11)
Flood Control	(5.68)	5.27	4.75	4.57	5.32	(6.11)
Industry	(5.57)	4.82	5.00	4.53	5.40	(5.70)
Irrigation	(5.75)	5.05	5.19	4.73	5.32	(6.33)
Local Government	4.75	4.14	4.31	4.40	(4.76)	4.20
Municipal Water	4.93	4.36	4.56	4.20	4.96	(5.00)
Water Quality	(5.39)	4.59	4.88	4.53	5.00	5.22
Business	(5.29)	4.68	4.81	4.60	4.92	5.20

Alternative Six, the combination of some of the other five, was given the second highest ratings. Its most positive ratings were for agriculture, electrical power, land sales, flood control, industry, and irrigation. It also received strongly positive ratings for recreation and municipal water. Manti key informants usually mentioned Alternatives One and Five as being the combination most likely to produce positive changes.

Alternative Five was the other one to have scores which qualified to be bracketed. It was rated as having particularly high positive impacts on agriculture, environmental hazards and local government.

Alternatives Two, Three, and Four were not given ratings as strongly positive as the others presented.

In summary, either the pipeline bypass or some combination of the alternatives was rated as having the most positive impacts. Removal of water from the head was also given some high positive impacts.

Three alternatives added by the January, 1977 engineering report of CH_2M Hill, a Boise consulting firm, were not rated by the key informants, since they were not available at the time of the current study interview processes. It was not felt that these needed to be evaluated by the current study's key informants because they were rejected by that engineering study, either due to their lack of consequence or because of prohibitive costs.

Chapter Five

Conclusions and Recommendations

Chapter Five

Conclusions and Recommendations

Conclusions

In summary, the research reported in Chapter Four indicates several ways in which the landflow has had social and economic impacts on Manti City. The landflow appears to have had little or no impact on the feelings of personal well-being of the residents of that city. This result holds for general indicators of well-being such as happiness and for more specific dimensions such as happiness with certain aspects of personal life. A similar lack of landflow impact was encountered for values held by the residents. The landflow did not increase the importance of religion, independence, or any of the ten other value dimensions assessed. Attitudes towards others were also little affected by the landflow. There is weak evidence that a therapeutic community may have formed in Manti, but the evidence is far from conclusive in this respect.

In contrast with the lack of evidence for influence of the landflow cited above, there is strong evidence that Manti residents are experiencing greater stress than residents of Gunnison and Mt. Pleasant. Also, Gunnison residents are experiencing more than those in Mt. Pleasant. The increased stress is exhibited in both psychological and physiological symptoms. Perhaps related to the stress is the evidence that Manti residents have a much greater sensitivity to the threat of other hazards, especially drought, auto accidents, epidemics, floods, riots, and water pollution.

When the focus shifts from individual well-being to the quality of the community, there is little evidence that the ratings of the quality of Manti differ from those of the other two communities. The landflow may

have resulted in diminished ratings of the quality of economic development and property values, but there is no negative relationship evidenced between the landflow and the other dimensions of quality of the community examined. Water quality is perceived as being of greater quality in Manti than in the other two communities.

In spite of the small number of differences in the ratings of quality of various aspects of the community, the surveys reveal that both residents in general and the key informants believe the landflow had reduced the quality of Manti as a place to live. Several economic activities, including employment for the young, income, property values, industry, business and agriculture are believed to have declined. Noneconomic activities such as recreation, home gardens and environmental quality have also dropped. On the other hand, water quality and local government are perceived as having improved.

A third area of potential landflow impact is that of linkages of residents to the community. There is no evidence of any changes in residents' participation in civic matters, attachment to the community, closeness to relatives or visits with friends which result from the landflow.

Finally, several aspects of Manti's economy were examined. The major impacts of the landflow on the private sector appear to have been cancellation of plans for an industrial park and the failure of three manufacturing enterprises to locate in Manti. These are losses in the sense that potential growth was lost, not in the sense that existing enterprises suffered a direct loss. There is also some evidence that agriculture, business, industry, real estate, finance, and construction all experienced a temporary decline during the period of the major landflow movement and that immediately following. However, most of these activities appear to have recovered.

The landflow has influenced the public sector of the economy in some important respects. Prior to the landflow the city had a small surplus fund and experienced little difficulty in meeting the routine expenses of providing necessary services. There were plans to improve the water supply, streets and sidewalks. The landflow's most direct impacts were the creation of a larger deficit for the water department, the loss of revenues from the electrical department, and the need to meet payments on bonds issued to finance the removal of the city water line from the landflow site to the opposite or north side of the canyon. The city officials have been forced to eliminate plans for other improvements in services. They also report difficulty in maintaining existing services at their prelandflow level. The term of bonded indebtedness makes it possible that the financial problems for the city may continue for some time: until the bond is retired in 1995 or until there is sufficient growth to offset the increased debt. The growth alternative is highly complicated due to the demands it often makes for added services and facilities prior to actual receipt of tax revenues from the growth sector.

Recommendations

The impacts summarized above suggest several actions which could be taken to alleviate those conditions. First, a systematic program of information dissemination is needed. Information concerning the past movement patterns of the landflow, current reports on recent movement as monitored frequently, the potential for future movement and a realistic view of potential effects and dangers if there is renewed movement. This dissemination of information should be pursued locally and statewide. The local information program, if made credible through participation of local leader-

ship, could serve to reduce the stress and perceptions of continued landflow impact. The information presented both locally and statewide would serve to reassure business and manufacturing enterprises that the landflow is not a factor which should preclude consideration of Manti as a site for their operations. This assumes that the recent reports concerning lack of landflow movements and considerable stablization are credible.

Second, there is a definite need to provide financial assistance to Manti's local government. At present, the landflow has placed the city in a position where it must choose between reducing services and allowing existing facilities to decline on the one hand or raising the local mill levy on the other. Both of these alternatives place the city in an unfavorable position relative to other communities in Sanpete County. It has a tendency to reduce the desirability of Manti as a place to live for current residents and potential residents. This difficulty is a direct consequence of the landflow. Hence, it would appear reasonable to expect some additional financial assistance to reduce or eliminate the landflow impact on the quality of the community and its economy.

Finally, the engineering report by CH_2M Hill recommends that there be no action undertaken to alleviate the landflow problem. The recommendation is based on a consideration of the dollar cost involved in accomplishing each of the alternatives and the probable benefits which would result. It concludes that the cost of each alternative is sufficiently high relative to the benefits that none should be undertaken. It is suggested here that the alternatives be re-evaluated in the light of the combined social and economic consequences discussed in this report. The stress, perceptions of a threat, reluctance of businesses and manufacturers to locate in Manti, apparent decline in quality of the community, and the cost to the city's

decision-making capacity, may be sufficient to warrant selecting some alternative such as one of those preferred by the Manti key informants.

It is clear that the landflow has created sufficient changes to merit some action by state and federal agencies. The three suggestions presented above merit serious consideration in light of the findings here reported.

In addition, alternative actions need to be explored.

Appendices

Appendix A

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Appendix B

Letters from City Officials

MAYOR
Frank G. Wanlass

RECORDER
Bart A. Peterson

TREASURER
Melba DeMill

MANTI CITY

ON HIGHWAY 89 MANTI, UTAH 84642

Manti LDS Temple

CITY COUNCIL
Don Olsen
~~Ray Keller~~
Stanley Voorhees
Gregory Maylett
Robert Bessey
Brian McArthur

CITY ATTORNEY
Paul Frischknecht

December 29, 1976

Dear Fellow Citizen:

The State of Utah has contracted with the Snow College Office of Community Services to conduct a social and economic study of the consequences of the Manti Canyon Slide. The results of the study with other studies being conducted will be important to the making of decisions about the management of the slide.

The study objectives include a systematic analysis of any effects of the slide on this community, its residents, businesses, and farms. While some information is already available, there is much essential information available only from citizens of our community. We hope it will be convenient for you to assist the researchers in their work, and we urge your participation.

Sincerely,

Frank G. Wanlass

Frank G. Wanlass
Mayor

Gunnison City

GUNNISON, UTAH 84634

December 21, 1976

Dear Fellow Citizen:

The State of Utah has contracted with the Snow College Office of Community Services to conduct a community research study. The researchers have met with our City Council to explain their project and its objectives. We support the intent of the research and the methods they intend to employ. We hope it will be convenient for you to assist the researchers in their study, and we urge your participation.

Sincerely,

Woodrow

Woodrow Beck, Mayor

MT. PLEASANT CITY

A MUNICIPAL CORPORATION

MT. PLEASANT. UTAH

Dear Fellow Citizen:

The State of Utah has contracted with the Snow College Office of Community Services to conduct a community research study. The researchers have met with our City Council to explain their project and its objectives. We support the intent of the research and the methods they intend to employ. We hope it will be convenient for you to assist the researchers in their study, and we urge your participation.

If you have any questions on this study or problems arise, please contact myself or a member of the City Council.

Sincerely,

Glen I. Hardy

Mayor Glen I. Hardy

GIH:db

Appendix C

Interview Schedule and Preliminary Letter

(Interview Schedule)

INTRODUCTION

My name is _____, representing Snow College. About two days ago, one of our secretaries contacted you to arrange this visit. As we explained in the introductory letter, we are conducting a social and economic study of some aspects of the Manti slide. The information we gather will be used in an environmental impact study authorized by the Forest Service.

While you are not legally bound to participate, your cooperation is necessary to make the results of the study comprehensive, accurate, and timely. Let me stress that in order to protect your privacy, all of your comments are strictly confidential and the information will be reported in a summary form which will not allow identification of the individuals who have responded.

Name:

Age:

Sex:

Position(s):

KEY-INFORMANT INTERVIEW SCHEDULE

1. How much do you know about the Manti slide?

Uninformed			Moderately Knowledgeable				Highly Knowledgeable
0	1	2	3	4	5	6	7

Comments:

2. What do you think are the major consequences, either good or bad, of the slide for your community? If you would like, you can use this scale (HAND CARD #I) to assist you in describing the size of the consequence.
(IF EACH OF THE FOLLOWING IS NOT MENTIONED, PROBE.)

Item	Volunteered?	Effect Magnitude %	Comments
Agriculture			
Business			
Cullinary Water Quality			
Electrical Power			
Employment			
Environmental Hazards			
Environmental (Physical) Quality			
Fish and Wildlife			
Flood Control			
Home Gardens			
Industrial			
Irrigation Water			
Land Sales			
Local Government			
Recreation			
Other			

Extremely Negative	Negative	Slightly Negative	None	Slightly Positive	Positive	Extremely Positive
-3	-2	-1	0	+1	+2	+3

In addition to the information you have just provided, an important part of the research is concerned with your community as a place to live.

3. Would you please comment briefly about the city or town where you now live on each of the following at the present time. You may want to use this card (HAND CARD II) to rate them.

Dimension	Rating	Comments
How is it as a place to raise a family?		
As a place with adequate health and medical facilities?		
What is the quality of schools?		
The adequacy and quality of water supply?		
The recreational opportunities?		
The opportunities for cultural refinement (theater, art, etc.)?		
The availability of good jobs for young people?		
The opportunity for earning a liveable income?		
The adequacy of law enforcement and police protection?		
The availability of shopping facilities?		
The effectiveness of local and county governments in meeting community problems?		
The reliability of local people?		
The general attitude of local people?		
How frequently are crimes committed in your community?		
What about religious activity?		
Moral conduct?		
Property values?		

Well Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Well Above Average
-3	-2	-1	0	+1	+2	+3

4. Some people have suggested that important changes have occurred here as a result of the Manti slide. What effects, if any, has the slide had in your community on each of the following: Here is another card you may use to assist yourself. (HAND CARD III.)

Dimension	Rating	Comments
As a place to raise a family?		
As a place with adequate health and medical facilities?		
The quality of schools?		
How about the adequacy and quality of water supply?		
The recreational opportunities?		
The opportunities for cultural refinement (theater, art, etc.)?		
The availability of good jobs for young people?		
The opportunity for earning a liveable income?		
The adequacy of law enforcement and police protection?		
The availability of shopping facilities?		
The effectiveness of local and county governments in meeting community problems?		
The reliability of local people?		
The general attitude of local people?		
Frequency of crimes?		
Religious activity?		
Moral conduct?		
Property values?		

Well Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Well Above Average
-3	-2	-1	0	+1	+2	+3

7. I have a list of several things that people often feel are important. Could you tell us how important each of these is to people around here? (HAND CARD IV) You may want to use scale A in describing your feelings.

Item	Importance*	Comments	Change**	Comments
Economic development				
Individual development				
Material comfort				
Meaningful work				
Religion				
Academic achievement				
The community				
Physical fitness				
Being recognized as a person of high standing				
Environmental concerns				
The family				
Other				
Other				

8. Are there things not on the list that are particularly important? What are they? (Add to 7)

9. Has the importance of any of these changed over the last few years? How? (Probe, if needed.) (Code on 7)

* Not at all — Moderately Serious — Very Serious

0 1 2 3 4 5 6 7

**

Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better
-3	-2	-1	0	+1	+2	+3

10. Do most people here feel a part of the community? How?

Not at all			Moderately So				Very Much So
0	1	2	3	4	5	6	7

Comments:

11. Do they cooperate well with each other?

Not at all			Moderately So				Very Well
0	1	2	3	4	5	6	7

Comments:

12. Are ther many who are willing to leave for better jobs elsewhere?

None Are			About Half Are				All Are
0	1	2	3	4	5	6	7

Comments:

13. Is this changing? How?

Many Less			No			Many More
-3	-2	-1	0	+1	+2	+3

Comments:

14. To what degree is the average person able to influence the decisions made by local government that affect him?

Dimension	Rating	Comments
City		
School District		
County		
Six County Association of Governments (Six County Commissioners' Organization)		
Other		

Not at all		Few		Some		Most		All of Them
0	1	2	3	4	5	6	7	

Comments:

15. Did it used to be that way? How has it changed?

It is now:

Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better
-3	-2	-1	0	+1	+2	+3

Comments:

16. To what degree is the average person able to influence the decisions made by state and federal governments that affect him?

Dimension	Rating	Comments
State		
Federal		

Not at all		Few		Some		Most		All Of Them
0	1	2	3	4	5	6	7	

Comments:

17. Did it used to be that way? How has it changed?

It is now:

	Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better
State:	-3	-2	-1	0	+1	+2	+3

	Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better
Federal:	-3	-2	-1	0	+1	+2	+3

Comments:

18. Would you say that a small group of people run things in your community or is there a variety of people making the decisions?

Small Group			Moderate Participation				Everyone Participates
0	1	2	3	4	5	6	7

Comments:

19. How well do business and governmental agencies located in your area cooperate with each other?

No Cooperation			Moderate Cooperation				Complete Cooperation
0	1	2	3	4	5	6	7

Comments:

20. How about businesses? How well do they cooperate with each other?

No Cooperation			Moderate Cooperation				Complete Cooperation
0	1	2	3	4	5	6	7

21. Returning to your thoughts about the slide itself.

a. How important is it to you that something be done about it?

Not at all										Extremely Important
0	1	2	3	4	5	6	7	8	9	10

b. What do you believe should be done?

22. Six alternatives to the slide problem are being evaluated. Here is a list of the six. (HAND CARD V) I will read the name of an area of concern. Please indicate how you think each alternative will improve or worsen that concern. You may want to refer to the scale at the bottom of the list of alternatives in describing how the alternative will influence the concern.

Item	Alternative						
	1	2	3	4	5	6	7
Agriculture							
Electrical Power							
Employment							
Land Sales							
Environmental Hazards							
Environmental Quality							
Fish and Wildlife							
Other Recreation							
Flood Control							
Industry							
Irrigation							
Local Government							
Municipal Water							
Water Quality							
Business							

Much Worse	Worse	Slightly Worse	No Change	Slightly Better	Better	Much Better
-3	-2	-1	0	+1	+2	+3

SPECIALIZED QUESTIONS FOR KEY INFORMANTS

☐ 1. Each Governmental Official:

a. How much money would you say the slide has cost?
(1) City government _____
(2) County government _____
(3) State government _____
(4) Federal government _____

b. How much of an effect has the slide and public reaction influenced the ability of government to perform its functions?

(1) City government:

Great Decline			No Effect			Great Improvement
-3	-2	-1	0	+1	+2	+3

(2) County government:

Great Decline			No Effect			Great Improvement
-3	-2	-1	0	+1	+2	+3

(3) State government:

Great Decline			No Effect			Great Improvement
-3	-2	-1	0	+1	+2	+3

(4) Federal government:

Great Decline			No Effect			Great Improvement
-3	-2	-1	0	+1	+2	+3

☐ 2. Each Business Informant:

a. About what was your sales volume in 1973? _____

b. About what was your sales volume in 1975? _____

c. How many employees did you have in 1973? _____

d. How many employees do you have now? _____

e. Do you know of any businesses who have left Manti due to the slide threat?

_____

_____

_____

f. Do you know any businesses who have refused to locate in Manti due to the slide?

_____

_____

_____

☐ 3. Each Realtor:

a. What were your total sales in 1973? _____

b. What were your total sales in 1976? _____

c. How much land is there on the market today compared to 1973?

Less			Same			Much More
-3	-2	-1	0	+1	+2	+3

d. About how many housing starts were there in 1973? _____

e. About how many were there this year? _____

f. How would you say the slide has affected real estate sales and land values?

_____

_____

_____

_____

☐ 4. Educators: (Superintendent of Schools)

a. What was the school enrollment in each school in your district in 1973?

_____

b. What is the school enrollment in each school in your district at present?

_____

c. Compare your school financial situation today with the way it was in 1973.

_____

_____

_____

_____

☐ 5. Agricultural People:

a. About how much did your cropland produce in 1973? _____

b. About how much did it produce this year? _____

c. What was the value of an acre of cropland of average production in 1973? _____

d. What is the value of the same acre today? _____

e. How would you say the slide has affected agricultural productivity?

_____

_____

_____

f. Has the slide influenced anyone you know to leave agriculture as an occupation? How Many?

_____

☐ 6. Contractors and Builders:

a. About how many housing starts were there in 1973? _____

b. How many housing starts have there been this year? _____

c. About how many non-residential construction sites were you involved in in 1973?

_____

d. About how many non-residential construction sites were you involved in in 1976?

_____

e. How has the slide affected the construction industry around here? _____

_____

_____

_____

☐ 7. Bankers and Governmental Finance Agencies:

a. About how much money did you have in new loans in 1973? _____

b. How about 1976? _____

c. What were your institution's total assets in 1973? _____

d. In 1976? _____

e. How would you say the slide has affected the economics of this community?

_____

_____

_____

☐ 8. Church Leaders:

a. What percent of your ward, stake or congregation membership is active at the present time? _____

b. What would comparable figures be for 1973? _____

c. To what do you attribute the difference in activity (or lack of significant difference)? _____

_____

d. In your opinion, in that three year period, has there been any substantial change in the following:

Item	Rating	Comments
Stability of Families		
Incidence of Legal or moral transgressions		
Apparent mental or spiritual health of church members		
Community spirit within the ward, stake, or congregation		

Much Worse			No Change			Much Better
-3	-2	-1	0	+1	+2	+3

e. To what do you attribute these changes? _____

_____

_____

_____

☐ 9. Do you have any other feelings or concerns about the slide and what it means for your area? _____

_____

_____

_____

_____

(Preliminary Letter)

SNOW COLLEGE
EPHRAIM, UTAH 84627
OFFICE OF COMMUNITY SERVICES AND CONTINUING EDUCATION
GARTH R. BEACHAM, PH.D., DIRECTOR VELDON L. LAW, ASST. DIRECTOR
BARBARA J. JUSTESEN, OFFICE MGR.

We are writing to request your participation in a study designed to obtain information about the social and economic consequences of the Manti Canyon Slide. The study is being conducted by the Snow College Office of Cummunity Services under contract with the State of Utah. The results of the study will be incorporated into a report used by the Office of the State Planning Coordinator and a federal agency in evaluating the probable consequences of several suggested solutions to the slide problem. You are one of a relatively small number of local leaders who will be asked to assist us. Your candid help is crucial to the success of the study and the accuracy of the results.

In a few days one of the members of the survey team will contact you to arrange a convenient time for a brief interview. It will require no advance preparation on your part, and your comments will be completely confidential.

We shall be happy to answer any questions you might have. Please don't hesitate to call the Survey Team Leader, Mr. John McLain, at 283-4021, Extension 259; or the undersigned at 283-4021, Extension 208.

Thank you.

Sincerely,

Garth R. Beacham

Garth R. Beacham, Ph.D.
Project Director

GRB:nm

Appendix D

Mailed Questionnaire and Transmission Letters

(Mailed Questionnaire)

I. Please respond to the following questions about yourself.

1. What is your age: _____

2. How many years of formal schooling have you had? _____

3. Are you male? _____ female? _____

4. How many years have you lived in your present community? _____

5. Where did you live before then? _____
City State

6. What was the population of your home town (the place where you spent most of your youth) while you were in your teens? _____

7. What is your marital status?
Married _____ Single _____ Divorced _____ Widowed _____

8. What has been your average monthly take home pay for 1976? _____

9. What is your occupation? _____

10. To what newspapers and news magazines do you subscribe?
Name
1. _____
2. _____
3. _____
4. _____

11. In a typical week, how many times do you listen to news reports on either television or radio? _____

12. How many clubs, organizations and community groups do you belong to? _____

13. How many times during the past week did you get together with friends to do things such as going out together or visiting in each other's homes? _____

14. How many times during the past week did you get together with relatives to do such things as going out together or visiting in each other's homes? _____

15. About how many of your relatives live in the same county with you? _____

16. About what percent of your friends live in the same city or town you do? _____

17. In their spare time, to what degree do the members of your immediate family do things together? (Circle the appropriate number.)

We don't do anything together			We do things together about half the time					We do everything together
0	1	2	3	4	5	6	7	8	9

18. In the past year, how often did you inform yourself about the issues and problems facing the leaders of your community? (Circle the appropriate number.)

Never		Occasionally				Frequently			Always
0	1	2	3	4	5	6	7	8	9

19. Would you like to live in this community the rest of your life? (Check the appropriate response.)

_____ 1. Definitely not
_____ 2. Not particularly
_____ 3. Would not make much difference to me
_____ 4. I think so, yes
_____ 5. Definitely yes

20. In general, how do you feel about living here? Would you say it is: (Check appropriate response.)

_____ 1. A very good community
_____ 2. A pretty good community
_____ 3. Undecided
_____ 4. Not a very good community
_____ 5. Not a good community at all

II. Please indicate how much you think the following items have changed in the last ten years in this community. A -3 indicates you feel it is much worse. Circle the number which most adequately indicates the way in which these things have changed in the last ten years.

	Much Worse					Much Better
1. Obedience to religious codes of conduct	-3	-2	-1	+1	+2	+3
2. Behavior of teenagers	-3	-2	-1	+1	+2	+3
3. Obedience to laws	-3	-2	-1	+1	+2	+3
4. Neighborliness	-3	-2	-1	+1	+2	+3
5. The standard of living	-3	-2	-1	+1	+2	+3
6. The chance to get a good job	-3	-2	-1	+1	+2	+3

III. Please complete the following.

1. How do you feel your community rates, relative to similar communities in the United States, as a home for a person like you? Rate your community on each of the following by checking the appropriate box for each item.

Community Characteristic	Much Above Average	Above Average	Average	Below Average	Much Below Average
Economic Development					
Employment Opportunities					
Family Environment					
Fire Protection					
Growth Potential					
Housing					
Local Government					
Neighborliness					
Police Protection					
Recreational Facilities					
Schools					
Sewage Disposal Facilities					
Street & Sidewalk Maintenance					
Telephone Service					
Water Supply					

2. Please indicate the degree to which you feel each of the following represents a threat to the well-being of you and your family by circling the appropriate scale number for each item.

	No Threat at All				A Moderate Threat					A Huge Threat
Air Pollution	0	1	2	3	4	5	6	7	8	9
Auto Accident	0	1	2	3	4	5	6	7	8	9
Drought	0	1	2	3	4	5	6	7	8	9
Earthquake	0	1	2	3	4	5	6	7	8	9
Epidemic	0	1	2	3	4	5	6	7	8	9
Flood	0	1	2	3	4	5	6	7	8	9
House Fire	0	1	2	3	4	5	6	7	8	9
Nuclear radiation exposure	0	1	2	3	4	5	6	7	8	9
Plane Crash	0	1	2	3	4	5	6	7	8	9
Riot or civil disorder	0	1	2	3	4	5	6	7	8	9
Tornado or hurricane	0	1	2	3	4	5	6	7	8	9
War	0	1	2	3	4	5	6	7	8	9
Water Pollution	0	1	2	3	4	5	6	7	8	9

IV. In addition to the information about you and your community, we would like you to respond to some questions about the way you see the world in general. The information is extremely important to the success of our project. In responding, feel free to say how you really feel about these items.

Please use the numbers below to indicate the degree to which you agree or disagree with the statements on the following page. If you find that the numbers to be used in answering do not adequately indicate your own opinion, use the one which is closest to the way you feel.

If you strongly agree - - Circle +3
If you somewhat agree - - Circle +2
If you slightly agree - - Circle +1
If you slightly disagree - Circle -1
If you somewhat disagree - Circle -2
If you strongly disagree - Circle -3

	Strongly Disagree	Somewhat Disagree	Slightly Disagree	Slightly Agree	Somewhat Agree	Strongly Agree
1. A person should treat all people the same, regardless of who they are.	-3	-2	-1	+1	+2	+3
2. I often feel lonely.	-3	-2	-1	+1	+2	+3
3. I don't really enjoy most of the work that I do, but I feel that I must do it in order to have other things that I want.	-3	-2	-1	+1	+2	+3
4. If I should die today, I would feel like my life has been very worth while.	-3	-2	-1	+1	+2	+3
5. One must avoid dependence on other persons, whenever possible.	-3	-2	-1	+1	+2	+3
6. People should accept new ideas gradually and only with caution.	-3	-2	-1	+1	+2	+3
7. The world in which we live is basically a friendly place.	-3	-2	-1	+1	+2	+3
8. Everything is relative, and there aren't any definite rules to live by.	-3	-2	-1	+1	+2	+3
9. Things are changing so fast these days that one doesn't know what to expect from day to day.	-3	-2	-1	+1	+2	+3
10. The things most people think are important usually seem insignificant to me.	-3	-2	-1	+1	+2	+3
11. Most people do not hesitate to go out of their way to help someone in trouble.	-3	-2	-1	+1	+2	+3
12. The average person has an accurate understanding of the reasons for his behavior.	-3	-2	-1	+1	+2	+3
13. It is only wishful thinking to believe that one can really influence what happens in society at large.	-3	-2	-1	+1	+2	+3
14. Every person should give some of his time for the good of his town or country.	-3	-2	-1	+1	+2	+3
15. Most people are honest primarily because they're afraid of getting caught.	-3	-2	-1	+1	+2	+3

V. Now we want to get your reaction concerning a number of different activities. Please indicate the importance of each of the following activities to you personally. A six means that it is highly important. A zero indicates it is of no importance. Circle the number which most accurately indicates the activity's importance to you.

	Not Important			Moderately Important			Extremely Important
1. Enjoying books, music, art, philosophy, and sciences	0	1	2	3	4	5	6
2. Being kind to people, even if they do things contrary to one's belief	0	1	2	3	4	5	6
3. Being well mannered and behaving properly in social situations	0	1	2	3	4	5	6
4. Upholding the honor of one's group	0	1	2	3	4	5	6
5. Studying regularly in order to become a well-educated person	0	1	2	3	4	5	6
6. Keeping in good physical shape	0	1	2	3	4	5	6
7. Gaining recognition for one's achievements	0	1	2	3	4	5	6
8. Telling the truth, even though it may hurt oneself or others	0	1	2	3	4	5	6
9. Adhering to the doctrine's of one's religion	0	1	2	3	4	5	6
10. Practicing self control	0	1	2	3	4	5	6
11. Developing new ways of approaching life	0	1	2	3	4	5	6
12. Standing up for what one thinks is right, regardless of what others think	0	1	2	3	4	5	6

VI. Now, suppose that a nine represents the best possible life for you. A one represents the worst possible life. The numbers in between one and nine are various degrees of goodness of life. Indicate your feelings by circling the appropriate scale number.

	Worst Life				Average Life				Best Life
1. Where do you feel you personally stand at the present time?	1	2	3	4	5	6	7	8	9
2. Where were you personally five years ago?	1	2	3	4	5	6	7	8	9
3. Just as your best guess, where do you think you will be five years from now?	1	2	3	4	5	6	7	8	9
4. Now, looking at your area, suppose the 9 represents the very best situation in the community. Where do you think your area is at the present time?	1	2	3	4	5	6	7	8	9
5. Where would you say it was five years ago?	1	2	3	4	5	6	7	8	9
6. Now looking ahead, just as your best guess, where do you think the area will be five years from now if everything goes as you expect?	1	2	3	4	5	6	7	8	9

7. How satisfied do you personally feel about what you have achieved in your own life in each of the areas listed below? (Place a check in the appropriate box for each item.)

Area of Achievement	Very Satisfied	Quite Satisfied	Somewhat Satisfied	Not Very Satisfied	Not At All Satisfied
1. Obtaining a good home and a place to live					
2. The kind of relationships you have in your family					
3. Amount of money you have and your standard of living					
4. The education and training you have					
5. The work you do—your job					
6. Your status and position in the community					

8. Compared with your life today, how were things four or five years ago—were things happier for you then, not quite as happy, or what? (Circle the appropriate scale number below.)

Much Less Happy					About the Same					Much Happier
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

9. We are interested in the way people are feeling these days. For each of the items below, please indicate how often you have felt like that during the past week. (Circle the appropriate scale number below.)

Feeling	Never	Once	A Few Times	Several Times	Almost Always	Always
A. Particularly excited or interested in something	1	2	3	4	5	6
B. Pleased about having accomplished something	1	2	3	4	5	6
C. Bored	1	2	3	4	5	6
D. Proud because someone complimented you on something you had done	1	2	3	4	5	6
E. That you had more things to do than you could get done	1	2	3	4	5	6
F. Vaguely uneasy about something without knowing why	1	2	3	4	5	6
G. Severe headaches	1	2	3	4	5	6
H. Upset or irritated	1	2	3	4	5	6

10. Would you rate your marriage as: (Circle one.)

1. Extremely happy
2. Happier than average
3. About average
4. Not as happy as the average
5. Very unhappy

11. About how many hours a day, on the average, did you watch television last week?

_____

12. During the past week, how many times did you get high on liquor or other stimulants? _____

13. Taking all things together, how happy would you say you are these days? (Circle the appropriate scale number.)

Very Unhappy					Neither Happy Nor Unhappy					Very Happy
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

VII. One of our research objectives is to determine the social and economic consequences of environmental problems such as the Manti slide. The following questions focus specifically on that problem.

1. Would you please indicate the level of your knowledge about the Manti slide by circling a number on the following scale.

Uninformed			Moderately Knowledgeable				Highly Knowledgeable
0	1	2	3	4	5	6	7

Comments:

2. Below, we have provided a list of some of the aspects of the community that might be affected by the Manti slide. Please rate the consequences from -3 (extremely negative) to +3 (extremely positive) by circling the number which best represents your feelings.

Item	Extremely Negative	Moderately Negative	Somewhat Negative	No Consequence	Somewhat Positive	Moderately Positive	Extremely Positive
Agriculture	-3	-2	-1	0	+1	+2	+3
Business	-3	-2	-1	0	+1	+2	+3
Cullinary Water Quality	-3	-2	-1	0	+1	+2	+3
Electrical Power	-3	-2	-1	0	+1	+2	+3
Employment	-3	-2	-1	0	+1	+2	+3
Environmental Hazards	-3	-2	-1	0	+1	+2	+3
Environmental Quality	-3	-2	-1	0	+1	+2	+3
Fish and Wildlife	-3	-2	-1	0	+1	+2	+3
Flood Control	-3	-2	-1	0	+1	+2	+3
Home Gardens	-3	-2	-1	0	+1	+2	+3
Industrial	-3	-2	-1	0	+1	+2	+3
Irrigation Water	-3	-2	-1	0	+1	+2	+3
Land Sales	-3	-2	-1	0	+1	+2	+3
Local Government	-3	-2	-1	0	+1	+2	+3
Recreation	-3	-2	-1	0	+1	+2	+3
Other:	-3	-2	-1	0	+1	+2	+3

3. Returning to your thoughts about the Manti slide itself:

   a. How important is it to you that something be done about it? Circle the appropriate scale number below.

Not At All										Extremely Important
0	1	2	3	4	5	6	7	8	9	10

   b. What do you believe should be done?

(1st Transmission Letter)

SNOW COLLEGE
EPHRAIM, UTAH 84627
OFFICE OF COMMUNITY SERVICES AND CONTINUING EDUCATION
GARTH R. BEACHAM, PH.D., DIRECTOR VELDON L. LAW, ASST. DIRECTOR
BARBARA J. JUSTESEN, OFFICE MGR.

We are writing to request your participation in a research project designed to help determine what factors make a good community. This study is part of a larger project to assess possible changes in selected Sanpete communities over the past five years. Is is serious professional research, and your participation is both solicited and sincerely appreciated.

You are one of a relatively small number of people being asked to complete the accompanying materials. Please complete the questionnaire as soon as possible and return it in the envelope provided. Your candid responses are crucial to the success of the project and the accuracy of the results.

You may be assured of complete anonymity. Each questionnaire contains an identification number for mailing purposes only. This is so that we may remove your name from the mailing list when the questionnaire is returned. Your name will not be placed on the questionnaire. Furthermore, all results of this study will be published in such a way that answers on any single questionnaire cannot be identified.

We shall be most happy to answer any questions you might have. Please write or call. The telephone number is 283-4021, Extensions 208 or 259.

Thank you for your assistance.

Cordially,

Garth R. Beacham

Garth R. Beacham, Ph.D.
Project Director

GRB:nm

(2nd Transmission Letter)

SNOW COLLEGE
EPHRAIM, UTAH 84627
OFFICE OF COMMUNITY SERVICES AND CONTINUING EDUCATION
GARTH R. BEACHAM, PH.D., DIRECTOR VELDON L. LAW, ASST. DIRECTOR
BARBARA J. JUSTESEN, OFFICE MGR.

Dear Friend:

About ten days ago we sent you a questionnaire designed to collect your opinions regarding possible changes in the environment of our area. To this date, we have not received your completed questionnaire. If you have sent it, please accept our gratitude. If you have forgotten, we will deeply appreciate hearing from you. If you have lost or misplaced the materials, please call 283-4021, extension 208 (collect, if you live outside our exchange), and we'll get replacements to you.

We believe that this study may contribute information needed to make important policy decisions. At least one agency will use this evidence of public attitudes to assist them in making decisions significant to the welfare of Sanpete County.

Your opinion is vital to the success of our study. Each questionnaire is important to the reliability of the research. Since you are part of a relatively small group selected from your community, the accuracy of the data depends upon a complete return of the questionnaires. Won't you please let us hear from you by mailing your reply today?

Sincerely,

John K. McLain

John K. McLain
Survey Coordinator

JKM/nm

(3rd Transmission Letter)

SNOW COLLEGE
EPHRAIM, UTAH 84627
OFFICE OF COMMUNITY SERVICES AND CONTINUING EDUCATION
GARTH R. BEACHAM, PH.D., DIRECTOR VELDON L. LAW, ASST. DIRECTOR
BARBARA J. JUSTESEN, OFFICE MGR.

May we review the circumstances surrounding a problem we have? We are engaged in an important research study, attempting to determine the consequence of possible changes in our environment. The data from this study is needed to assist in the making of policy decisions important to our county. The study is being conducted under contract with the State of Utah, and we need the benefit of your experience and insights into your community.

Recently we mailed you a questionnaire asking that you become a contributor to that study. Subsequently, we reminded you that we have not heard from you.

We have had an excellent response to our study, but we need your contribution. Research accuracy depends upon complete returns. The questionnaire does not require a great deal of time, and your responses are vital, since they may differ from others already received. We are, therefore, sending this letter by certified mail in case we have incorrectly addressed you with our other letters.

May we hear from you by immediate return mail? We have enclosed a second questionnaire and return envelope for your convenience. Please give us your first reactions. Don't "puzzle" over individual items but respond quickly and honestly. We know you are busy, but you'll make us very happy with a prompt response.

Sincerely,

Garth R. Beacham

Garth R. Beacham, Ph.D.
Project Director

GRB/nm

Enclosure